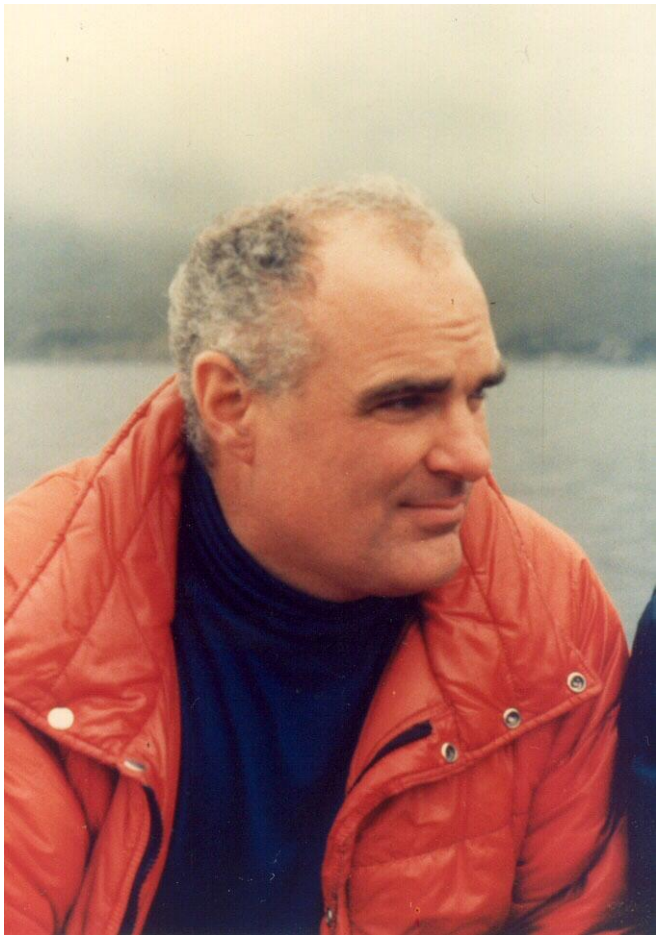
ICE MAN

THE LIFE AND TIMES
OF A COWBOY SCIENTIST



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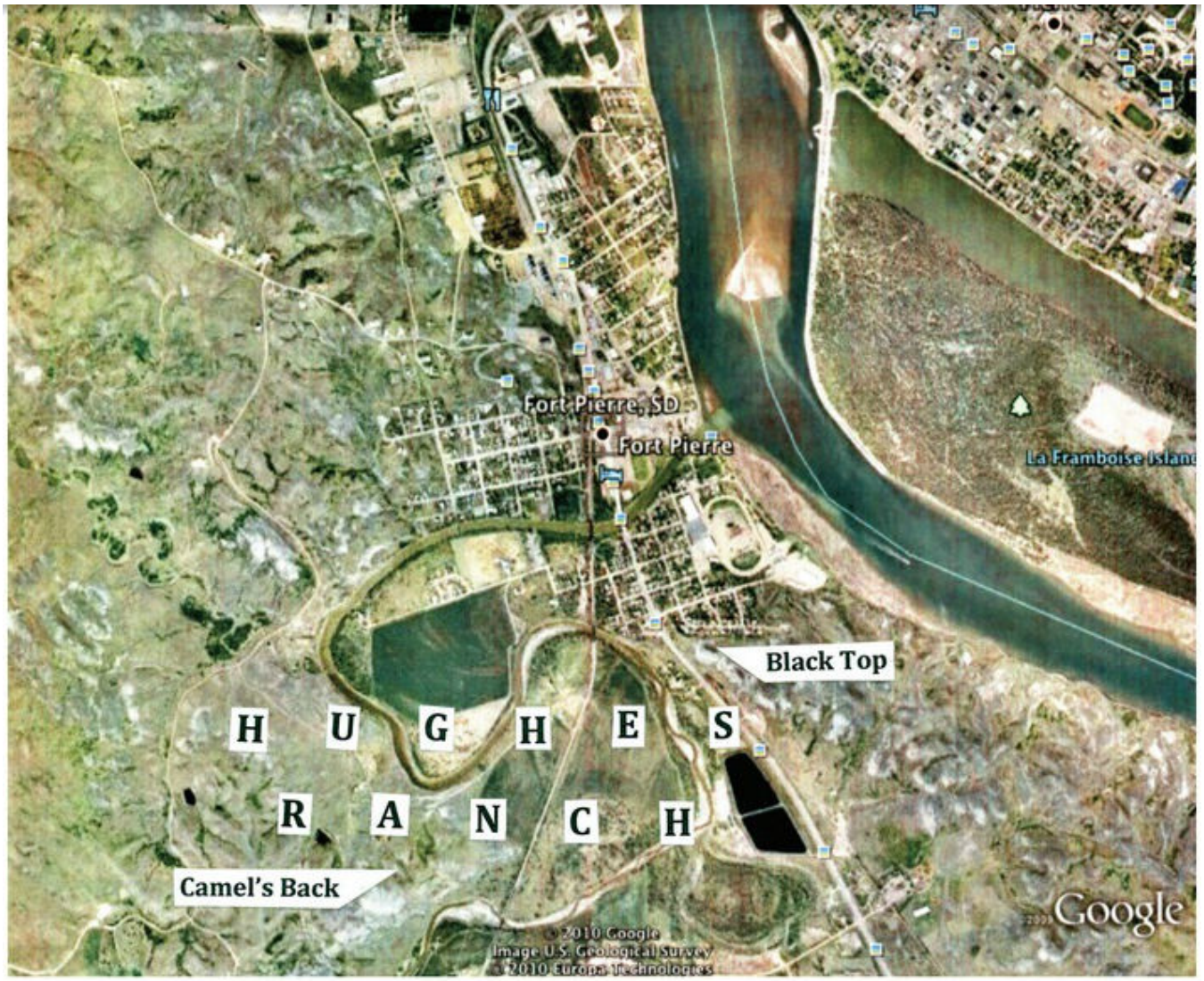
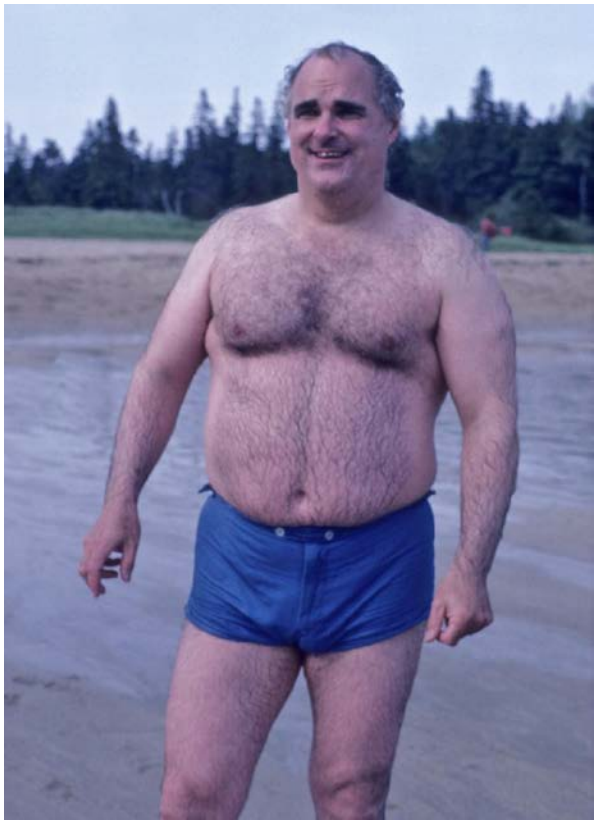
Volume I



Fort Pierre on Missouri River
and Hughes Ranch in Bad River Valley

Me at Three

The fanatical eyes.
The mischievous grin.
The disheveled clothes.
The sturdy body.
The clenching fists.
The planted feet.
The cowboy boots.
And the charm…
To get away with it!



The Abominable Iceman

Forty-two years later…

And *nothing* has changed!

Dedicated to Beverly Ann Barr Hughes, my Life's Companion.

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ACKNOWLEDGEMENTS

As always with a scientific career spanning over a half-century, there have been too many to adequately thank for encouragement and support. Here are some I must name.

My parents, Leo and Mary Hughes, provided my gene pool and guided me through the first nineteen years of my life, especially grounding me in my Roman Catholic Faith and emphasizing education as the key that unlocks all the doors. My older brother, Leo, Jr., provided information for Chapter 1. He and my younger brother, John Timothy, shared their experiences growing up in South Dakota during numerous family reunions, many of which are preserved in ICE MAN.

Paul Anderson, Chairman of the Metallurgy Department at the South Dakota School of Mines and Technology, and Alexander McHugh of that department, poured the foundation for my career in science. Paul remained a lifelong friend. Morris Fine, as Chairman of the Materials Science Department, accepted me as a graduate student at Northwestern University and provided a priceless example of human kindness. John Brittain was my advisor for both my masters and doctoral degrees. He displayed infinite patience coping with my "cowboy" disposition. Other graduate students, mostly his, remain in e-mail contact with me to this very day. I note Robert Carnahan and Stanley Wulf in particular. Johannes Weertman and Jerome Cohen served on my thesis committees. Hans introduced me to glaciology, and his letter to Colin Bull got me accepted into the old Institute of Polar Studies (IPS), now the Byrd Polar and Climate Research Center (BPCRC), at The Ohio State University. There I was exposed to the full spectrum of polar research.

Colin Bull and Richard Goldthwait, founders and directors of IPS, launched my career in glaciology and exposed me to glacial geology. Emanuel Rudolph, as director, secured my tenure-track appointment in the Civil Engineering Department with help from Colin. Gerald Holdsworth provided my first three field experiences "on the ice" in surveying the elevation of Mount Logan in Canada's Yukon Territory, drilling and logging holes through Meserve Glacier in Antarctica, and measuring deformation of Ice Island T3 in the Arctic Ocean. John Mercer provided my first field experience in glacial geology, in Argentine Patagonia. John Splettstoesser, Associate Director of IPS, and his wife Judy extended extraordinary hospitality to me and my wife Beverly during our years at IPS, as they did to all budding scientists there. John also proof-read an early version of ICE MAN and remained a close friend until he died. Lynn Lay, as librarian in the Goldthwait Library, arranged to have this final version of ICE MAN bound and archived.

I am eternally grateful to Henry Brecher, my closest friend and colleague during virtually all my polar glaciological field studies in Antarctica and Greenland, both at IPS and later at the University of Maine. Henry made detailed editorial inspections of my early version of ICE MAN and this version, and he worked with Lynn Lay to have it bound. Henry's career at IPS/BPCRC spans virtually all of American polar research dating from shortly after the International Geophysical Year, making him a priceless font of knowledge spanning over a half-century.

At the University of Maine, Harold Borns, Jr. arranged my joint appointment in the Geology Department (now the School of Earth and Climate Sciences) as chairman, and in the Institute for Quaternary Studies (now the Climate Change Institute) as director. George Denton gave me responsibility for reconstructing ice sheets at the last glacial and interglacial maxima for CLIMAP (Climate: Long-range Investigation, Mapping, and Prediction) during the International Decade of Ocean Exploration. CLIMAP introduced me to the broad spectrum of atmospheric and oceanic research, in addition to geological research, an experience that put me in contact with leading scientists worldwide, contacts that remain to this day. Among my U. Maine colleagues, I am especially indebted to Thomas and Davida Kellogg for including me in their Antarctic expeditions to determine glacial history in the Amundsen Sea, notably in Pine Island Bay, from studies of sea-floor sediments and paleomarine micropaleontology. These expeditions provided lifelong contacts with marine geologist John Anderson and physical oceanographer Stanley Jacobs. My 36 years at U. Maine allowed me to introduce glaciology to graduate students who have become prominent glaciologists, notably James Fastook, Craig Lingle, Douglas MacAyeal, William Pfeffer, Mauri Pelto, Jesse Johnson, Coen Hofstede, and others who became prominent glacial geologists.

In glaciology, those having a major formative influence on my career include Johannes Weertman, John Nye, Charles Swithinbank, Petr Shumsky, John Glen, Gordon Robin, Hilda Richardson, Louis Lliboutry,

William Budd, Barclay Kamb, Charles Bentley, Colin Bull, James Zumberge, Maynard Miller, Mark Meyer, Jo Jacka, H. Jay Zwally, Robert Thomas, Sivaprasad Gogineni, Douglas MacAyeal, Richard Alley, Robert Bindschadler, James Fastook, David Schilling, Richard Hindmarsh, Frank Pattyn, Cornelis van der Veen, Kenneth Jezek, Gerald Holdsworth, Roger Hooke, Stanley Paterson, and Captain Ronald Kollmeyer of the United States Coast Guard Academy.

In glacial and marine geology, those having a similar formative influence include Richard Goldthwait, John Mercer, George Denton, Harold Borns, Jr., John Andrews, Weston Blake, David Drewry, Geoffrey Boulton, Matthias Kuhle, John Imbrie, Mikhail Grosswald, Johan Kleman, Peter Clark, John Anderson, and Leonid Polyak. I must also mention S. W. “Sam” Carey in tectonic geology, David Bromwich and Claire Parkinson in climatology, and Stanley Jacobs in oceanography.

H. Jay Zwally, Richard Cameron, and Julie Palais funded my glaciological research through the Office of Polar Programs at the U. S. National Science Foundation. Officers and crews on U. S. Coast Guard icebreakers delivered me to Jakobshavn Isbrae in Greenland and to Pine Island Glacier in Antarctica. Helicopter pilots and crews of the U. S. Navy delivered me to Meserve Glacier and Byrd Glacier in Antarctica. In the United States Antarctic Research Program (USARP), John Ricker, David Bresnahan, John Splettstoesser, Robert Dale, and Pieter J. Lenie, captain of the N.S.F. research vessel *Hero*, provided logistic and technical support for my glaciological field studies.

Those inspiring me to actively defend the sanctity of human life include Father Paul Marx, Father Thomas Carleton, Randall Terry, Joseph Scheidler, Judie Brown, Reverend Michael Bray, Reverend Dallas Henry, Reverend Michael Heath, Ronald and Agnes Stauble, Elizabeth and Jeffrey Harden, Edward Gerrish, Kara Verault, Thomas Colman, Wayne Desjardins, Ernest Gallant, Gerald Thibodeau, Steven Whiting, John Broderick, Troy Newman, Mark Harrington, Mark Crutcher, David Daleiden, and most of all, Beverly Hughes. Mike Heath also put my early version of ICE MAN on the Internet for anyone to access free of charge.

PREFACE

A “Cowboy Scientist” has two meanings in my case. I was a “cowboy” on the Hughes cattle ranch in South Dakota and I was a “cowboy” in the sense of being a renegade in the scientific community, preferring my own path more than following the established path. My fieldwork was conventional, but my theoretical work is mostly what I call Topsy-Turvy Science because it turns conventional “explanations” of things scientific upside down by proposing an opposite explanation. At the end of *ICE MAN* readers will find a lively discussion of my Topsy-Turvy “Cowboy” Science.

We have all heard of The Abominable Snowman of the Himalayas, a creature we have never seen. Those who have seen these “Yeti” tell us they are hairy ape-like people who live simply and privately on the edge of existence. We don’t know who they really are or if they exist at all. *ICE MAN* begins with a photo I call The Abominable Iceman of Glaciology. I am a hairy ape-like creature with a devil-may-care attitude familiar to everyone who “knows” me. Hidden inside is the Terry Hughes I remember most fondly, a thin carefree youth who was a dreamer more than a doer. You will meet him up-close in the first chapter, but he haunts all subsequent chapters. This Terry Hughes wasn’t very competitive in sports or studies but he engaged in both for personal satisfaction. He didn’t seek awards but some arrived anyway. He was physically strong even when losing weight while gaining height in late adolescence. He was a rebellious youth. Teachers slapped his face hard and often. He liked fights with other boys, “knocking heads” in football, and drawing pictures of antagonists engaged in *violencia e brutalidad*. He enjoyed showing them to other students, and I still have a portfolio of his drawings I show to others from time to time. As a dreamer, he knew what he wanted to accomplish in life, but made no plans to attain specific goals, only using opportunities as they appeared that kept open the possibilities. Eventually all dreams were realized. One dream was to visit “faraway places with strange-sounding names” and he did. Glaciology made it possible.

Readers of *ICE MAN* will find no titillating descriptions of sexual adventures. At age 36 when I got married I was still chaste. I survived on fantasies. Nor did I imbibe tobacco, alcohol, or drugs. As a dreamer, I wanted a life that combined physical and mental activities equally, and I got it as a glaciologist. Fieldwork in glaciology can be physically demanding. I was strong and had stamina so I chose those kinds of tasks for myself on glaciers, leaving lighter work to others.

Spiritually, I was out-of-step with most Establishment scientists. Unlike many Roman Catholics passing from boyhood into manhood, I never doubted my faith and always practiced it. Darwin’s notion that we came from worms and will be eaten by worms, and that “explains” human existence was for me the height of intellectual folly. It was like Esau exchanging his birthright for pottage to prefer that to the Biblical view that our origin was in the mind of the Creator of the Universe and our destiny was to spend eternity with Him simply by acknowledging Him and following His common-sense commandments. Only pride that subordinates intellect to will can make that Faustian bargain. Scientific evidence supporting the Biblical view is overwhelming. To avoid making that bargain requires sacrifice. The last and longest chapter in *ICE MAN* describes the sacrifices I made, largely because I married Beverly Ann Barr, a most remarkable woman, as you will see. Sacrifices put me in prisons in six states, but gave us children we otherwise wouldn’t have.

ICE MAN is a journey through time and space to all seven continents and over 100 countries. It is a journey through scientific controversies that impact all our lives. It is a journey into the human spirit. It is my journey through life. Please join me. You’ll be glad you did.

CHAPTER 1 - ORIGINS

Red lines on the global hemispheres for Chapter 1 show, to the best of my knowledge, travels taken by my kinsmen, mostly before I was born. They show travels to America in the nineteenth century and within America in the twentieth century up until 1940.

I was born in a blizzard on l5 February l938, just missing Saint Valentine's Day. I claim that as the reason why I never kissed a girl until I was a senior in high school, never had a date until I was in my mid twenties, and didn't marry until I was 36. I grew up on a cattle ranch that was the original Hughes homestead in central South Dakota. It was in the Bad River Valley just south of Fort Pierre and not far from a monument that marked the geographic center of North America. That probably makes me a landlubber. My home town was and, in my heart, still is Fort Pierre. The yard of our ranch house ended at the town line. Fort Pierre was laid out in a one-mile square on the west bank of the Missouri River, opposite Pierre, the capital of South Dakota. But it is much older than Pierre. Fort Pierre was the site of an Indian settlement of unknown antiquity when Joseph LaFramboise established a fur trading post there in l8l7. It has been continuously inhabited by white people ever since, making it the oldest such settlement between the Mississippi River and the Spanish missions of the American Southwest.

A fort was built on the site in l832 by Pierre Chouteau for the American Fur Company, founded by John Jacob Astor. It was named Fort Pierre Chouteau. After Chouteau's death it became known as Fort Pierre. The United States Government built a series of forts along the Missouri in the nineteenth century, first to protect the fur trade and then to protect settlers. It purchased Fort Pierre for this purpose in l855, and converted it into a cavalry outpost. By l880 the fort had been replaced by a thriving little town where Bad River enters the Missouri. Two of the first businesses were Fischer Brothers General Merchandise and Rowe Hardware. Both were very much still in business during my boyhood years, but now they no longer exist.

Construction of a railroad bridge between Pierre and Fort Pierre began in 1905, the year of a devastating flood that washed out the Fort Pierre bridge over Bad River and many houses, including the original Hughes ranch house on the south bank of Bad River. The railroad continued along the Bad River Valley and reached Rapid City in 1907. Fort Pierre was the county seat of Stanley County, which at that time extended from the Missouri River to the Badlands, and included Haakon and Jackson Counties. An

artesian spring provided hot water for a bathhouse swimming pool and natural gas for street lighting. By 1910, Fort Pierre had a brick company, a creamery, a hospital, two movie theaters, Catholic and Congregational churches, the Stockgrowers Bank, and a large school. A highway bridge connecting Fort Pierre to Pierre wasn't completed until 1926.

In the middle of the twentieth century, when I was a boy, Fort Pierre still had the look of a frontier town. The 1950 *Hammond Complete World Atlas* showed only railroads on its state maps of the United States, although trucks and cars were replacing freight and passenger trains as the common means of long-distance transportation. The Chicago and Northwestern Railroad ran a passenger train up the Bad River Valley from Fort Pierre to Rapid City before I started school, but it ran only freight trains when I graduated from High School. My older brother, Leo, took the passenger train to Rapid City to have his teeth fixed. He stayed with his Godmother, Irene, who lived there. Towns up the valley from Fort Pierre were Teton, Wendte, Van Metre, Bovine (a signpost when I was a boy), Capa, Midland, Howlin, Powell, Philip, Cottonwood, Quinn, and Wall, where Bad River began in the Badlands of South Dakota. Except for Fort Pierre and Philip, which were county seats, these were small railroad towns, where railroad "section" crews were responsible for maintaining one section of the railroad. Irish immigrants were brought in to help build the railroad. Many of them lived in these towns or became ranchers. I'm descended from them. Philip was named after a pioneer from Scotland, James "Scotty" Philip, and became the seat of Haakon County when it was formed from the western part of old Stanley County. Fort Pierre remained the seat of Stanley County, which was named after Scotty Philip's son, Stanley.

One of the few federal north-south highways in the nation, US 83, came up from Nebraska and dipped down into the lower Bad River Valley a few miles south of Fort Pierre. The gravel Bad River road ran west off US 83 and served ranchers who lived on the meandering bends of Bad River. Motor vehicles on Bad River road had to ford the river twice between Fort Pierre and Midland. Fort Pierre occupied most of the first big bend, our ranch occupied the remainder of the first and nearly all of the second big bend, and ranches owned by Mike Donahue, Joe Schomer, Mrs. Mack Dickey, and Charlie Carlisle occupied the next big bends. Part of the original Hughes ranch lay between the Dickey and Carlisle ranches, but had been sold when I was a boy. That was the pattern of settlement in Bad River Valley all the way to the Badlands. The bluff at the south end of the first big bend was known as Hughes Hill, because that's where my grandfather, John F. Hughes, built his big house after his first house was washed away in the 1905 Bad River flood. US 83 climbed Hughes Hill and then descended into Fort Pierre on the floodplain of the first big bend. It crossed Bad River bridge and passed the town park on the east side, which occupied several acres and included an ice skating rink and a football field. Woods separated US 83 and the railroad tracks on the west side. Beyond the park, US 83 entered downtown Fort Pierre, which was on an alluvial terrace about ten feet above the flood plain.

The first downtown intersection on the terrace had a vacant lot on the east side, which became the site of the Casey Tibbs 4-H building, and Cannon's gas station on the west side. Across the intersection, the county courthouse was on the east side and a statue where Father Christian Hoecken baptized the first White child in Dakota Territory was on the west side. At this intersection, US 83 made a 90-degree right turn to become Main Avenue, then a 100-degree left turn to become Deadwood Street, and continued north for a mile before turning east to cross the Missouri River bridge and enter Pierre, the capital of South Dakota. The railroad generally paralleled the highway, but not the jog through downtown Fort Pierre. Instead, it cut through a bluff just north of downtown, leaving a shale hill between the railroad and US 83.

Both the railroad and highway bridges were supported by overhead steel spans, one span for Bad River and several spans for the Missouri River. Spans were painted silver on the highway bridges and black on the railroad bridges. I and my brothers, Leo two years older and Tim eight years younger, would sometimes climb the spans and cross the two Bad River bridges like we were on tightropes, but we stayed off of the Missouri River spans. Only US 83 was paved. All the other streets in Fort Pierre were gravel. Years later, the shale hill was removed and used to bring the floodplain up to the level of the terrace where downtown Fort Pierre was located. After that, US 83 paralleled the railroad with no jog.

The county courthouse on the left side of US 83, when it made the right-hand turn onto Main Avenue, was a three-story brick building surrounded by a wrought iron spiked fence. Inside the front

entrance was an impressive wide wooden staircase to the first floor, with side stairs to the basement where the county jail cells were located. From the first floor, side staircases went back to a landing below tall windows where a second central staircase led to the second floor. The same pattern continued to the third floor, where the county courtroom was located. Offices ringed a large open lobby at the top of the stairs on the first floor. Directly opposite the staircase was the county sheriff's office, which was open in front and separated from the lobby by a low railing breached by a low swinging door. The office of the county judge, who was my father throughout my boyhood years, was immediately to the right of the staircase. Inside his office, bookshelves along the side walls housed my grandfather's law books, which included leather-bound volumes of New York common law, Reports of the United States and South Dakota Supreme Courts, the Encyclopedia of Law and Procedure, and the Northwestern Reporter for all the upper Midwest states, all dating back to the turn of the century. On the wall behind my father's desk was a large window and a huge map of Stanley County that had printed on it every quarter section of land and its owner. An iron safe on wheels in one corner housed his important documents and his stamp collection. Many years later his stamp collection was stolen right out of his office. The thief and stamps were never found. Also on the first floor of the courthouse, as I recall, were the offices of the county treasurer, assessor, and register of deeds. So was the bathroom. The county library and more offices ringed another open lobby on the second floor. I checked out many books, but I remember only *White Panther* because it contained an exciting account of how an albino panther escaped from the coils of a giant python.

On the left side of Main Avenue, next to the courthouse, was the concrete schoolhouse, built in 1941 when the old school house burned down, with grade school classrooms and a gymnasium with a stage on the ground floor, and high school classrooms and a big assembly hall on the second floor. Above the blackboard in the front of the assembly hall was a picture of Christ at Gethsemane. Continuing east on Main Street was a small Episcopal Church, the Stark house, Fackleman's garage, the Fort Pierre Times building where the weekly newspaper was printed, Warne Grocery, and the Stockgrowers Bank building on the corner with Deadwood Street. On the right side of Main Street was the vacant lot where the Casey Tibbs 4-H building would be located, then there was Charlie Feezer's apartment building, my uncle Kiran Hughes' law office, Fort Pierre Cleaners in a building my father owned, a small empty building owned by my father which once had been my great aunt Mary Feeney's hat shop, a building with Holland's tailor shop and Johnny Huck's cobbler shop, the Weirich house, the Tumble Inn Café, and Fischer Brothers General Merchandise building on the corner with Deadwood Street. Across an alley from Fisher Brothers was a pool hall, then Frank "Irish" O'Leary's Silver Spur Bar, Fort Pierre's swankiest watering hole, and a big frame building that housed the town's hotel and barber shop. I particularly remember the smell of leather and shoe polish, the lasts, and rotating brushes operated by moving belts in the cobbler shop, the Linotype keyboard-operated typesetting machine, and the printing presses in the newspaper shop, and, in the barber shop, the iron and ceramic barber chair that swiveled, had a footrest, and reclining back, the big mirrors along one wall, hair tonic in primary colors and tall bottles on a shelf below the mirrors, and Earl Fackleman dusting me off with talcum powder after my haircuts—all for 35 cents.

On the right side of Deadwood Street, across from the (brick) Stockgrowers Bank, was Andy Ricketts' meat market when I was in grade school, which became a rowdy saloon called "the snake pit" when I was in high school. Then there was Ed Duffy's brick building, the tallest in town with three stories and apartments above Duffy's Café and Chateau Lounge, a vacant lot well below the concrete sidewalk (with open "rooms" under the sidewalk), Kelly's Chuckwagon restaurant, Rowe's Hardware Store, and the Hop Scotch Bar, both brick buildings. On the left side of Deadwood Street, on the corner with Main Avenue, was the Stockgrowers Bank Building, which was mostly an office building. Then there was Quentin Sutley's Whiteway Lockers meat market (after the Ricketts meat market closed and became the "snakepit" saloon), a package liquor store operated by Mrs. Sutley, Carmen Sutley's dentist office, the telephone office, the community dance hall, Marvin "Buck" Ronan's drug store, and the Fort Pierre National Bank building, with the Masonic Hall on its second floor. The telephone office was small, and inside all calls passed through a "central" operator who pulled plugs on long cables from a table in front of her and plugged them into holes on a board behind the table to complete calls (I still remember Billy Fischer's phone number—9652). The (brick) Fort Pierre National Bank had a corner entrance and all the tellers inside were behind a high wooden counter that had barred gates at each window. Anyone could get silver dollars as well as paper dollars in the bank. Rex Terry ran the bank and he paid me a dollar to sweep out the community hall after Saturday night dances. That's how I collected most of my silver dollars. They were all stolen in 1976 from my house in Bangor, Maine, when I was attending a scientific

meeting in Russia. Rex was also a Freemason. The Masonic lodge was above the bank. As a Catholic boy, I thought Masonic rites were vaguely Satanic, as Freemasonry was a secret society and what other than devil worship had to be kept secret? But Rex Terry's wife, Delia, was a Catholic and they lived just down from Hughes Hill, so I was of two minds about it.

Downtown Fort Pierre was mostly along Main Avenue and Deadwood Street, and occupied one block. Facing the other two sides of the block, behind the courthouse and the schoolhouse, was the school playground. Across the street beyond the playground was a long shale bluff cut through by the railroad tracks, leaving a barren shale hill. The only buildings on that street were the post office, next to Fort Pierre National Bank, and a gas station across the street from the bank. Inside the post office was a corridor with mail boxes on one wall and wanted posters on the other wall. Each box had a tiny door with a glass window and a combination lock. A sign above the postmaster's big window read, "If you expect to rate as a gentleman, don't expectorate on the floor."

Fort Pierre had three main residential sections. The South Side was south of the Bad River bridge, where US 83 was "B" Street. On its east side were three big houses. Mary Porter's house was at the foot of Hughes Hill on one corner with Park Avenue. She gave me painting lessons when I was a boy. Carl Fischer's house was on the corner with Cedar Street. His sons, Karl and Billy, were Leo's and my age. Rex and Delia Terry lived across "B" Street from the Fischers. Across Cedar Avenue from the Fischers was the Matheson house, which was next to Bad River bridge. It was surrounded by a concrete wall and must have been a showplace at one time. A catalpa tree (with big leaves like tobacco plants) in the yard had branches that extended over the wall. I liked to leap from the wall and swing from one of the branches, until one day I missed the branch and landed on the side of my head on the wooden sidewalk along the wall. I saw stars. There were only three east-west streets off of "B" Street on the South Side, Cedar Avenue, Park Avenue, and Wandel Avenue. Although we lived outside of town, we were part of the South Side.

From my perspective on Hughes Hill, the first street was Wandel Avenue, which ran west to meet Second Street and was halfway down Hughes Hill. At the south end of Second Street were a house on the west side where I spent my preschool years and the Sweeney house on the east side. The Sweeneys lived on the west corner of Wandel Avenue, the Quentin Sutleys lived on the east corner with "B" Street, and in the middle a long sidewalk crossed a big grassy lot owned by John F. Hughes (and later my father) and led to his big house on Hughes Hill just across the town line. On the north side of Wandel Avenue, the Schimmings lived across from the Sweeneys, the widow Barkley lived across from the grassy lot crossed by the sidewalk, then an elderly couple, the Keysers, and the Hucks lived across from Quentin Sutley. Milt Keyser kept work horses in a shed and pasture on the hillside east of "B" Street (US 83). His horses plowed the fields on the east and west sides of the John F. Hughes house when I lived there during my school years. The only ones about my age living on Wandel Avenue were Maureen and Leigh Schimming and David Goodwin. The Goodwins lived in part of the Sutley house. Dave "Goodie" Goodwin had rotten teeth.

Park Avenue ran east and west at the foot of Hughes Hill. Kids about Leo's and my age who lived on the east side were Freddie Hodoval, Colleen and Tommy Hughes (unrelated to us), Larry and Jim Creager, Terry and Gary Premus, and Joan and "Butch" Halloran. Freddie Hodoval was about three years older than I and he had something of a theatrical personality. Any possibility of a career in show business evaporated when he sang *Frosty the Snowman* at the school's Christmas pageant. The east side of Park Street ended at the main entrance to the Stanley County fairgrounds, where rodeos and horse races were held, including chariot races. Webb Lambert lived on the west side of Park Avenue. Rightly or not, we understood that he had been an Exalted Cyclops in the Ku Klux Klan when it organized to oppose Al Smith, the first Roman Catholic to run for President of the United States in 1928. Andy and Mabel Ricketts lived on the corner with Second Street. Their grandson Bob Ricketts lived with them, before moving into a new house. He was a year younger than I. We called him "Rapid Robert" because he ran in slow motion (he was short and fat). Park Avenue continued west across the railroad tracks, and joined a road that passed the Wheeler house, the Samuelson farm, and ended at Ivan and Meta Shiflet's house. Joe Wheeler was my younger brother Tim's age and his best friend. Kids made fun of Martina Samuelson, a big slow-witted girl who was about Leo's and my age. Ivan managed or leased our ranch on Bad River at one time.

Cedar Avenue ran east from “B” Street. From the Fischer and Matheson houses on opposite corners were the Anton Fischer house on the right and the Fackleman and Bartles houses on the left. Anton Fischer was one of the original Fischer brothers who founded Fischer Brothers General Merchandise. Eddie Bartles was my classmate in grade school. Then the Bartles family moved to Pierre, and their house was bought by a Texan named George Frick who harvested grain from Texas to Canada with his combines. His son, Glen, was a year below me in school. Other families on or near Cedar Avenue that had kids about my age were the Thompsons, Cannons, Blazes, and Hudsons. “Tuffy” Blaze was a husky kid who palled around with Leo and me. Naturally, most of my boyhood playmates lived on the South Side.

The other residential sections of Fort Pierre were the East Side, West Side and North Side. The East Side was the smallest. It extended one block from downtown Fort Pierre to the Missouri River. The Cunninghams lived there and their son, Paul, was Leo’s age. The West Side was across the railroad tracks. The Congregational and Catholic Churches were just beyond the tracks. The Wharton, Hoffman, Reinhart, Rathbun, Turbell, Kenzie, and Voorhees families had kids about Leo’s, my, and Tim’s age. Fifty years later Glenda Turbell told a mutual acquaintance that she was afraid of me in school because I drew gruesome pictures of torture and mayhem. The original town school was on a hill on the West Side, as was the town swimming pool, which was in disrepair when I was a boy. The West Side was supplied with natural gas, which was collected in a big dirigible-shaped iron tank in the middle of that part of town. The tank spilled out warm artesian water from a high pipe, and kids liked to splash and play under it. A road from the West Side went up to the Verendrye Hill monument. At that site a lead plate was found by my father’s boyhood playmates. Writing on the plate claimed the whole region for France in 1743. My great uncle Andy Feeney lived in the Duffy house at the foot of Verendrye Hill. The road continued beyond Verendrye Hill to join US 14, the highway that went west to Rapid City and the Black Hills of South Dakota. The North Side residential section included the Fort Pierre power plant and was mostly on the east side of US 83. The stockyards, grain elevators, and train station were on the west side. The Hart, Harris, Hackett, Laramie, Soesbe, Windedahl, and Giddings families lived on the North Side and had kids about our age. There were others, but these names come most quickly to mind. James “Windy” Windedahl was Leo’s age and he also drew pictures, but not gruesome ones.

I formally retired from the University of Maine on 15 January 2010 and joined my wife Bev. (Beverly) in a house we bought from Nyla Tibbs atop the Missouri Breaks just above Verendrye Hill. It had a view of the Verendrye Monument and the Statehouse in Pierre directly across the Missouri River, and views for miles both up and down the Missouri. We added a Sun Room with big picture windows to capture this panoramic view and a bedroom with big picture windows to capture the view up Bad River Valley where the Hughes ranch had been located.

Fort Pierre had a population of 95l in the l950 census, when I was twelve years old, and even today (2014) only about 2000 people live there. Nonetheless, its location gave it a significant role in the struggle among the Indians, French, and British for control of North America east of the Spanish possessions known as New Spain. French claims to North America began with the Verrazano expedition in l524. It led to the foundation of New France, which by l645 included maritime Canada, Quebec, and all lands surrounding the Great Lakes. From New France, French explorers, missionaries, traders, and trappers spread into the Hudson Bay lowlands and down the Mississippi River. British claims in North America began with the London Company, which founded the Jamestown settlement in Virginia in l607, and with the Hudson’s Bay Company, which was founded in l670. New France was a wedge between the largely English colonies on the Atlantic seaboard and the largely Scottish trappers and traders of the Hudson’s Bay Company. When La Salle sailed down the Mississippi in l682, he gave the name “Louisiana” to all lands drained by what the Indians called the “Father of Waters” and claimed them for the Sun King, Louis XIV of France.

Louisiana was the heartland of North America. It reached from the crest of the Appalachians in the east to the crest of the Rockies in the west, and from the Great Lakes to the Gulf of Mexico. It confined the English colonies to the Atlantic seaboard east of the Appalachians, and set the stage for the struggle between the French and British for control of North America that is known in American history as the French and Indian wars. The British won New France and divided Louisiana with Spain, with the Mississippi River being the boundary. After the American Revolution, the United States gained eastern

Louisiana from Britain and, after the French Revolution, Napoleon regained western Louisiana from Spain. In l803 he sold it to the United States, saying, “This accession of territory strengthens forever the power of the United States; and I have just given to England a maritime rival that will sooner or later humble her pride.” Control of the Missouri River, “Old Muddy” as it came to be called, was the Key to American expansion westward into the Louisiana Territory. A key location in that enterprise was the site that became Fort Pierre.

Fort Pierre straddles Bad River where it enters the Missouri River through the Missouri Breaks. The Breaks are bluffs where the rolling grasslands of central South Dakota become dissected by creeks and gullies that enter the Missouri River Gorge. The narrow floodplain of the Gorge lies some 400 feet below the high plains. The wooded floodplain with its big cottonwood trees provided shelter against the harsh winter winds blowing over the prairie. The Missouri River Gorge teemed with beaver and other fur-bearing animals during the rivalry between French and Scottish trappers and traders in the seventeenth century, when France and Britain wrestled for control of North America. Bad River cuts through the Missouri Breaks and reaches westward into the South Dakota Badlands, which are the uplifted and eroded floor of an ancient sea. Erosion produced a vast surreal landscape of soaring ramparts, winding canyons, bleak spires, and deep gulches, all banded with the earthy red, pink, brown, yellow, and gray hues of sunbaked clay. Dinosaurs roamed this region and their bones are continually being uncovered by erosion in the Badlands. Beyond the Badlands lie the Black Hills, a gigantic plutonic batholith whose crystalline core is older than Life on Earth. It contains the highest peaks east of the Rocky Mountains. The Black Hills are the sacred Paha Sapa, “Hills of Shadows,” holy ground for the Dakota (or Lakota) Indians, where the Great Spirit dwelled. The Dakota tribes were collectively called the Sioux by French fur traders in the eighteenth century. The Indians maintained a semi-permanent settlement at the mouth of Bad River, not only because the site was ideally situated for hunting and trading, but also because the Bad River Valley was the most direct migration route westward to the sacred Black Hills. The original Indians to settle here were Mandans, who built permanent settlements. They were pushed up the Missouri by the Arikaras. The Arikaras were being pushed up the Missouri into Mandan country by the Teton Sioux when French fur traders moved into the region.

The first Europeans known to have visited the large Indian village at the mouth of Bad River were the LaVerendrye brothers, who were exploring Louisiana for Louis XV of France. The LaVerendryes went west to the Black Hills and perhaps to the Rocky Mountains. On their return they stopped at the Indian village and buried a lead plaque on a high gumbo knoll in the middle of the encampment. They carved their names and the date, 30 March l743, on the plaque and claimed all the lands they explored for their king. George O’Reilly and Hattie Foster, teenage schoolmates of my father, discovered the plaque while taking a Sunday walk on l6 February l9l3. After Thomas Jefferson purchased Louisiana from Napoleon Bonaparte in l803, he sent Lewis and Clark up the Missouri River to explore the new territory. They camped at the Indian village on their way to the Pacific Ocean. The village became a permanent “White” settlement after Pierre LaFramboise opened a trading post in 1817. When Pierre Chouteau came up the Missouri on the steamboat, *Yellowstone*, in l832, it stopped at what then became known as Fort Pierre Chouteau. Aboard the *Yellowstone* was George Catlin, an artist from Philadelphia who became a legendary painter of Indian scenes. One of Catlin’s most famous landscapes was painted from the Missouri Breaks above Bad River, looking out over the fort, a village of some 3000 Sioux, and down the Missouri River Gorge. It was usual for 600 Indian lodges to be encamped around the fort in those years, up to and after l855 when Fort Pierre was purchased by the United States government.

As a cavalry outpost, Fort Pierre became a center of operations in the Indian wars against the Sioux and Cheyenne. These tribes were led by four great Sioux chiefs, Red Cloud, Sitting Bull, Crazy Horse, and Spotted Tail (Sitting Bull was more properly a medicine man). They made the Indians of the Northern Plains into the greatest light cavalry on Earth. They out-rode, outgeneraled, and out-fought the US cavalry for three decades. By l876 over one-third of the United States Army was operating against the Sioux. The high-water point of the Sioux was reached on 25 June l876 on the banks of the Little Big Horn River in Montana, where 5000 Oglala Sioux and Northern Cheyenne were encamped. Chief Crazy Horse and his braves wiped out the entire Seventh Cavalry led by General George Armstrong Custer. The *Yellowstone* brought the news down the Missouri to Fort Pierre, and from there it was telegraphed to the halls of Congress, where it caused a panic.

The United States Army never truly defeated the Sioux and Cheyenne in battle. What defeated them was the wanton slaughter of the buffalo in the l870s that made their nomadic way of life impossible, and forced them onto government reservations. The Indians used all of each buffalo they killed. The white buffalo hunters were initially interested mainly in buffalo robes, but by the end they harvested only the tongues. From its first trip up and down the Missouri in l83l, the *Yellowstone* returned to St. Louis "with a full cargo of buffalo robes, furs and peltries, besides l0,000 pounds of buffalo tongues." In l830 upwards of 60 million buffalo roamed the Great Plains from Canada to the Gulf of Mexico. By l880 the buffalo were all but extinct. Sitting Bull surrendered in l88l and in l885 joined Buffalo Bill Cody's Wild West Show. Sitting Bull was suspected of leading the "Ghost Dances" to bring back the buffalo on Standing Rock Indian Reservation in l890. He was shot by a Sioux scout working for the Army. Sitting Bull was a tall man. He wouldn't fit in the Army coffins. The Army officers ordered that his legs be chopped off and laid on his body in the coffin, so the great Sioux chief would not be buried in a coffin larger than the standard Army issue.

The Indian Wars had two stages that began after Dakota Territory was created by the US government in 1861. Dakota Territory extended originally from Minnesota to the continental divide, and encompassed most of the Sioux and Cheyenne nations. The first stage lasted through the American Civil War, and culminated in "Red Cloud's War." Red Cloud wanted the Bozeman Trail to the Montana gold fields closed, because it ran through the best Sioux hunting grounds. It ended in 1868 when the Sioux were given all of Dakota Territory west of the Missouri River, an area that became known as the Great Sioux Reservation. The second stage began after gold was discovered in the Black Hills and the Seventh Cavalry under Custer was ordered in 1874 to protect prospectors during the "gold rush" into the sacred Paha Sapa of the Sioux. It ended with a treaty that fragmented the Great Sioux Reservation into several smaller reservations in 1889, when North Dakota and South Dakota became the thirty-ninth and fortieth states.

The last engagement with the Sioux took place a year later, on 29 December 1890. When I was a boy, South Dakota history books called it "The Battle of Wounded Knee." Years later, when more objective historians prevailed, it became known as "The Wounded Knee Massacre." Troops from the US Seventh Cavalry, still smarting from Custer's defeat at the Little Big Horn, came riding into Chief Big Foot's starving Sioux village on Wounded Knee Creek at the southern end of the Badlands, on the pretext of ending the "Ghost Dances" that were to bring back the buffalo. They murdered every man, woman, and child that moved, firing cannons lined up on the bluffs along the creek. Of the 300 villagers, half were slaughtered. On the fifteenth anniversary of Custer's Last Stand, 25 June 1891, the US Congress awarded eighteen Congressional Medals of Honor to soldiers who conducted the Wounded Knee Massacre. The Congressional Medal of Honor is the nation's highest military decoration. The Wounded Knee Massacre was the last military strike against Indians in American history.

When longhorn cattle were driven up the Chisholm Trail from Texas to Kansas after the Civil War, many new cattle trails soon branched northward and westward to supply military posts, mining camps, and towns. Texas ranchers had contracted to supply cavalry troops, reservation Indians, and Black Hills miners with beef, and Texas drovers entering Dakota Territory noticed the vast grasslands west of the Missouri River that had become largely ungrazed as the buffalo vanished. Seeing the opportunity, they brought Texas Longhorn breeding stock into the West River country and became the first ranchers, along with other cattlemen from the Great Plains states.

The cattlemen and cowboys of the American West were the last frontiersmen. They followed the Mountain Men, those explorers, traders, and trappers who opened the frontier. All of them were self-reliant, independent, courageous, and wary of civilization. Most of these people originated in Appalachia. Appalachian "hillbillies" are derided today, but more than any other group they molded the essential American character. To understand them, it is necessary to revisit Ireland in the sixteenth, seventeenth, and eighteenth centuries. Since Norman times, the English had tried to conquer Ireland. When Norman attempts to "civilize" the Celtic chieftains by sending armored knights and building castles only resulted in intermarriage and defection to the Gaelic clans, Queen Elizabeth decided to confiscate the lands, expel the Irish, and replace them with English settlers. She attempted this scheme in the northern province called Ulster, where Irish resistance was strongest. It failed because too few English wanted to migrate to such a remote and alien region.

To break that resistance, Elizabeth enacted Penal Laws throughout all Ireland. Made more draconian through following centuries, they made it a crime for Irish Catholics to receive an education, enter a profession, hold public office, vote in elections, engage in trade or commerce, live within five miles of any town, own a horse worth more than five pounds, purchase or lease land, hold a mortgage on land to secure a loan, carry weapons of any kind, acquire land from a Protestant, attend Catholic worship services, or educate their children in the Catholic faith. Catholics were forced by law to attend Protestant worship services and financially support Protestant churches. Priests were hunted with bloodhounds, to be hanged, drawn, and quartered if caught. As a practical consequence of this, the only secure way for an Irish Catholic to support his family was to join the British army and navy at the meager pay available to common soldiers and sailors. It was steady employment, given England's constant foreign wars and empire building, and Irishmen loved to fight anyway. They, along with Scots Highlanders, became the cannon fodder used to forge the British Empire, providing upwards of one-third of the fighting men. Fighting foreign wars also kept Irishmen trained to fight out of Ireland, where they would only foment rebellion. The Penal Laws provided a most tidy "solution" to the Irish Problem.

This situation was exacerbated when King James VI of Scotland became King James I of England, thereby uniting the crowns and creating Great Britain. He thought that his fellow Scots could be successful "planters" because they were close neighbors to the Ulster Irish and were fellow Celts. The Ulster Irish had been called Scots in Roman times. They migrated into Caledonia, as northern Britain was called, and made it Scotland. Trade and migration between Ulster and Scotland had gone on for centuries. However, by the time of James VI, the Protestant Reformation had made Scotland Presbyterian, while Ireland remained Roman Catholic.

The opportunity to settle Ulster with Protestants presented itself when the Catholic chiefs of the great Ulster clans of O'Neill and O'Donnell fled Ireland at the end of the Elizabethan era. James was able to confiscate their lands in l6l0 and transfer the land to loyal settlers, mostly Lowland Scots. Scottish Highlanders were already established in the eastern Ulster counties of Antrim and Down, so only counties farther west were planted. Native Irish were allowed to retain their land if they became Protestants. Otherwise they could only become tenants on plantation lands that had been theirs for generations. The remaining Irish took to the hills and conducted guerrilla warfare against the settlers. A general uprising in 1640 was put down with great cruelty by Oliver Cromwell. As Seumas MacManus describes Cromwell's Puritan army of 17,000 in his *The Story of the Irish Race* (Devin-Adair Co., New York, 1944): "They were extraordinary men, his Ironsides—Bible-reading psalm-singing soldiers of God—fearfully daring, fiercely fanatical, papist hating, looking on this land as being assigned to them the chosen people, by their God. And looking on the inhabitants as idol-worshipping Canaanites who were cursed of God, and to be extirpated by the sword…To keep the men's venom at the boiling point there were chosen to travel with the troops, and also to sail with the fleet, Puritan preachers of the Word distinguished for their almost demoniacal hatred of the Papistical Irish…noted for the violence of their invective against all things Irish and Catholic, preached a war of extermination in the most startling and fearful manner—in the pulpit invoking the curse of God upon those who should hold their hands from slaying 'while man, woman, or child of Belial remains alive'." Sir William Petty estimated that from 1641 to 1652 the Irish population was reduced from 1,466,000 to 616,000.

Frugal Puritan as he was, Cromwell offered confiscated land to his Ironsides in lieu of salaries. Those who took the offer also commonly took Irish brides made widows by the war and accompanying famine. These women secretly, and then openly, taught their children the Catholic faith and the Gaelic language, as their new husbands minus the Puritan preachers succumbed to the charms of the Emerald Isle. The fate of orphans was not so benign. Several tens of thousands of them, mostly teenage boys and girls, were sent as slaves to the British West Indies and the English tidewater colonies in America. Citing Reverend E. A. D'Alton, Joseph Williams, S. J., in his *Whence the "Black Irish" of Jamaica* (Dial Press, New York, 1932): "The old women and men, being of no use, were allowed to starve, but the younger people were hunted down as men hunt down game, and were forcibly put on board ship, and sold to the planters in Barbados. The men and boys were put to work in the sugar plantations; the girls and women—wives and widows of officers and soldiers, gently nurtured, perhaps and in manners refined—were to be the wives and mistresses of the West Indian planters, to take the place of negresses and maroons. Some on the long sea voyage sickened and died, and became the food of sharks, and to them fate was kind. Others were duly landed at Indian Bridge. Their beauty was their ruin, and attracted their masters' lustful eyes,

and in that land of the tropics and the trade winds they lived as in a prison, their faith banned, their race and nation despised, their virtue outraged, their tears derided; and as they looked out on the waving fields of sugarcane, they sadly thought of their own dear land, with its fields so fertile and so green, now separated from them for ever by thousands of miles of rolling sea."

This Irish slave population mixed with African slaves, and accounts in large part for the prevalence of Irish names among Black Americans today. It would not surprise me if Shaquille O'Neal, a center in the National Basketball Association, and Donovan McNabb, a quarterback in the National Football League, have Irish roots dating from interbreeding in the seventeenth century. The typical "Black" American is brown and his facial features reflect substantial racial mixing with "White" Americans. My guess is most of them have Irish ancestors.

The next large migration of Irish to America took place in the eighteenth century. After Cromwell, a Catholic Restoration of the monarchy was attempted in England. It was thwarted when Parliament brought William of Orange from The Netherlands to be the Protestant King of England. This led to the Battle of the Boyne north of Dublin in l690. Charles II was defeated by William in that battle, thereby ending the Stuart dynasty of Scottish kings on the English throne. From then on, Ulster Presbyterians, who began calling themselves Orangemen, steadily lost favor with the crown and the English Parliament. Laws enacted in l663, l67l, l698, and l703 ruined Irish trade with the English colonies, destroyed the woolen and linen industries in Ulster, reduced Presbyterians to the level of religious persecution suffered by Catholics, and created an intractable hatred of the English. Crops failed in l7l7-l8, l725-29, l740-4l, l754-55, and l77l-75. Rents on tenant farmers, including the Ulster plantations, were doubled and tripled when the original leases expired. This led to a series of massive migrations from Ireland to the English colonies during the eighteenth century, mostly Ulster Presbyterians who settled in the Piedmont and Appalachian Mountains from Maine to Georgia. However, many of them had been Catholic Irish, as is evident from typical Irish Gaelic names in the telephone directories of Appalachia. The Penal Laws were lifted from these Catholics if they became Protestants, and their priests were hunted in Ireland. Without their priests, it was convenient for them to adopt Protestant ways in the New World. Circuit-riding Baptist and Methodist preachers on the frontier converted most of them, Presbyterian and Catholic alike, into Evangelical Christians.

Eighteenth-century Irish emigrations took place after the seventeenth-century English colonists had settled the tidewater parts of the Atlantic seaboard, mixing with Dutch settlements along the Hudson River, Swedes along the Delaware River, and French Huguenots in the major towns. The Irish had to compete for land with German Rhinelanders who had settled in the Mohawk Valley of New York, in southeastern Pennsylvania (where they were known as the Pennsylvania Dutch), along the Shenandoah Valley of Virginia, and on the Georgia piedmont. In addition, Scots Highlanders had settled along the Cape Fear River and Pee Dee River valleys of the Carolinas. The Irish settled in all these areas, but generally occupied frontier lands further west, so that by the time of the Revolutionary War they occupied Appalachia from Maine to Georgia, had fought Indians during the French and Indian War, and were beginning to move down the Ohio River from Pennsylvania and pour through Cumberland Gap in Virginia to occupy Kentucky and Tennessee. During the Revolutionary War, under General John Sullivan, they conquered the trans-Appalachian lands occupied by the Iroquois Indians allied with the English. As a result, the Mississippi River became the western boundary of the United States. During the War of 1812, the English plotted to seize these lands by capturing New Orleans. That hope ended when Andrew Jackson, whose parents were both born in Ireland, defeated the British decisively in the Battle of New Orleans. As usual, Scots Highlanders were cannon fodder marching at the front of English soldiers. In one of the great ironies of history, two Irishmen, Sullivan and Jackson with their Irish soldiers, kept the British Empire confined to Canada in North America. It was the price paid for centuries of persecuting the Irish in Ireland.

After the Revolutionary War, these Irish, largely from Ulster, migrated from Appalachia northward toward the Great Lakes, southward toward the Gulf Coast, and westward toward the Missouri, the Ozarks, and Texas. With generations of internecine feuds in Ireland as their heritage, they made superb Indian fighters and frontiersmen. They were followed and joined by the British, German, and other nationalities in colonial America and from this mix a new nationality emerged, the American. But the basic personality and outlook were forged in Ireland, especially in Ulster. The Irish stamp made them George

Washington's most reliable soldiers, constituting from a third to a half of the Continental Army, most enlisting for the duration, it gave the South many of its greatest generals in the Civil War, and it was the backbone of the United States cavalry that opened up the American West. They founded the Republic of Texas. Starting as Mountain Men, fur traders and trappers, they became ranchers, farmers, miners, loggers, and businessmen.

These conflicts were not so different from the guerrilla wars conducted in Ulster between Catholics and Presbyterians since l6l0, and that continue today. Many of the Mountain Men had this lineage. It was present in the cattlemen who became the West River ranchers of South Dakota and in the miners who populated the Black Hills. Many of the legendary figures of Black Hills history were of this type; Buffalo Bill Cody, Wild Bill Hickok, Jack McCall, Calamity Jane, and Poker Alice, to name a few. The type remains in Northern Ireland to this very day, where Catholics and Presbyterians continue their four-century guerrilla war. On the American frontier, however, these religious animosities gradually died out as the Irish mixed with other ethnic groups, and frontier preachers turned most of this new American breed into Baptists and Methodists.

The final and largest wave of Irish immigration to America took place in the nineteenth century, when several million arrived, compared to several tens of thousands in the seventeenth century and several hundreds of thousands in the eighteenth century. My Irish ancestry stems from this migration. The first peak was from 1846 to 1850 during the Irish Potato Famine, when the choice was emigrate or starve. A second peak took place in the 1880s, when whole villages were recruited by American industrialists to dig the canals, build the transcontinental railroads, and to provide manpower in mines and factories. The famine Irish settled mostly in the northeast USA, where they encountered hostility arising from Puritan bigotry and from fear they would take low-paying jobs from working-class Americans. "No Catholics Need Apply" and "No Irish Need Apply" signs appeared in shop windows and on factory gates. Irish Catholics adapted by taking over the Democratic Party by sheer force of numbers. It had been the minority party in the Northeast, where Whigs were in the majority until the Civil War. In a typical Irish family of eight sons and daughters, sons would become a priest, politician, fireman or policeman, whereas daughters would become a nun, nurse, teacher, or maid in some upscale Yankee family. Firemen, policemen, nurses, and teachers held jobs attained through political connections, which were forged by the politicians, priests, and nuns, with maids providing "inside" information on how the Yankee Establishment schemed to retain power. Catholic hospitals and schools served to cement this base of political power. The result was a strong bond between the Catholic Church and the Democratic Party in America. Another result was a conviction that the most secure ladder to success was provided by government, not by private enterprise. Being the first Catholics to arrive in large numbers, speaking English, and knowing English Common Law, these Irish Catholics established pathways used by other ethnic Catholics to enter the mainstream of American life.

The three waves of Irish immigration in the seventeenth, eighteenth, and nineteenth centuries, though each up to ten times larger than the preceding wave, contributed about the same proportion of people to the American population. In the 1980 census, Americans were asked to name what they considered was their primary ethnic identity, knowing most had multiple ancestries. The largest was German, with 30 percent, then Irish with 25 percent, then English with 23 percent, and so on. These three add up to 78 percent. Today, after a large Hispanic immigration, these percentages are less.

Settlement of Dakota Territory east of the Missouri River was quite different from the West River settlement. The first settlers were farmers, not ranchers. The farmers were mostly from the neighboring states of Iowa and Minnesota, and most of them were descended from New Englanders and New Yorkers who came into the Northwest Territory after the Revolutionary War to settle in what became the Great Lakes states. Settlers were concentrated in the southeast corner when Dakota Territory was created in l860 and Yankton became its capital after a treaty with the Yankton Sioux in l858. Settlement picked up after the Homestead Act of l862, when the Civil War ended in l865, during the good farming years from l868 to l873, and after the railroad reached Yankton in l873. Settlement changed fundamentally during this period. Settlers who originated from the American colonial stock became less numerous than settlers who were descended from more recent immigrants or who were immigrants themselves. These settlers had become the majority when South Dakota became a state in l889.

The earliest settlers were French fur traders and trappers who often married Indian women and became established on reservations, or became merchants and farmers after the fur trade ended. They may have entered South Dakota as early as l679 from Canada to Lake Traverse and Big Stone Lake, by way of the Red River of the North. They were hired by the American Fur Company in the eighteenth century, and became established along the Missouri River. As a distinct group, they are numerous in Union and Spink Counties in eastern South Dakota, but as individual families they are found everywhere in small numbers.

The earliest large group of foreign settlers were immigrant or first-generation Scandinavians, foremost the Norwegians. South Dakota is the most Norwegian state in America. Ethnic Swedes, Danes, and Finns are much fewer in numbers. Emigration from Scandinavia was driven by the shortened growing season at the height of the Little Ice Age in Europe. The pattern of Scandinavian settlement in the upper Midwest duplicated their distribution in Scandinavia itself.

Finns were most numerous in upper Michigan, Swedes were most numerous in Minnesota, and Norwegians were most numerous in the Dakotas. The first tier of Norwegian settlement in South Dakota was in the eastern counties next to Minnesota. From there they spread into all the other counties, including West River counties. Swedes followed the same pattern. In Minnesota, Swedes made Norwegians the butt of Scandinavian ethnic jokes but in South Dakota, where Norwegians were the majority, Swedes were the butt of the same jokes. Danes came into Dakota Territory after Denmark lost Schleswig-Holstein to Prussia in l864. They settled mainly in the southeastern counties. Many of them were Mormons. Gutzon Borglum, who carved the faces of Washington, Jefferson, Theodore Roosevelt, and Lincoln on Mount Rushmore, was a Dane. Finns settled in the northeast and in the northern Black Hills.

Germans were the next largest group to settle in eastern South Dakota. They included people who formed German settlements in the Mohawk Valley of New York and then moved westward with the frontier, people who settled the upper Midwest after the Revolutionary War, people who came directly from Germany, and people who had settled in Russia north of the Black Sea. Being farmers, they settled eastern South Dakota first, but they subsequently spread into the West River country. Those who came directly from Germany were mostly Low Germans on the North Sea coast. If people of German ancestry from all sources are lumped together, they are the largest component in the population of South Dakota. Germans have always mixed easily with other ethnic groups, however, so their cultural identity tended to become Americanized. Two exceptions in South Dakota are the Mennonites and Hutterites, whose distinctive colonies were still in the James River valley when I was a boy. They were Anabaptists who resisted military service, so they had to migrate from place to place when wars broke out in Europe. Mennonites lived on individual farmsteads, whereas Hutterites lived on communal farmsteads.

Like the Germans, the Dutch in South Dakota include settlers who can be traced back to colonial New York, specifically the Hudson Valley settlements, settlers who came from the upper Midwest states, and settlers directly from the Old Country. They are concentrated in the southeast counties. Unlike the Germans, they were not numerous and they resisted assimilation. They even established a wooden shoe factory.

Slavic settlers in South Dakota were mainly Czechs and Poles. The Czechs, coming from Bohemia, were called Bohemians. Like most immigrant groups, the Czechs settled in the southeast counties, where their polka music and dances became generally popular, and are now part of South Dakota culture. My aunt Dorothy married one of them, Joe Veverka. They had nine children. Poles settled in Day County. The most famous Pole is Korczak Ziolkowski, who went to the Black Hills when I was a boy and spent the rest of his life carving Thunderhead Mountain into a gigantic granite “sculpture-in-the-round” of Chief Crazy Horse on horseback leading his Sioux warriors into battle. This project is being continued by his large family. Ziolkowski had worked with Borglum on Mount Rushmore, but the Crazy Horse Memorial dwarfs that and every other sculpture on the planet. I’ve been watching Crazy Horse slowly emerge from Thunderhead Mountain for most of my life. Nobody knows what Crazy Horse looked like, but they do now (Crazy Horse did not allow photographs, saying, “Would you imprison my shadow too?”). Thunderhead Mountain stands alone in that part of the Black Hills, so Crazy Horse can be seen from miles away in all directions. It is ironic that the closest town is Custer.

Irish Protestants entering Dakota Territory included large numbers from Texas, who drove cattle to railheads in Missouri and Kansas after the Civil War, and then supplied beef to cavalry outposts and Indian reservations further north. They took note of the tall grass in the northern Great Plains after the buffalo were hunted to the verge of extinction, in a concerted Federal campaign to starve the Sioux and Cheyenne into submission when these tribes could not be conquered in battle. These Texans often became ranchers, especially in West River country beyond the Missouri.

Irish Catholic immigrants during and after the 1846-1850 potato famine in Ireland had the same pattern of settlement as the Norwegians and Swedes, numbering less than Norwegians but more than Swedes in South Dakota when immigration dried up during the First World War (26,643 compared to 56,73l and 22,872, respectively, in the l9l5 State Census). The first Irish settled in the southeast Dakota Territory in l859, following the great emigration from Ireland during the potato famine. Another period of large Irish immigration was from l879 to l907, when the Chicago and Northwestern Railroad was extended westward across central South Dakota to the Black Hills. The Chicago, Milwaukee, St. Paul, and Pacific Railroad had three routes across South Dakota, in the valleys of the Grand and Moreau Rivers to the north and the White River valley to the south. The Grand River route went all the way to Seattle. These railroads were constructed specifically to attract immigrants into South Dakota and farther west. The companies sent recruiters to Ireland and other countries to recruit laborers to build the railroads and then to settle their families on homestead land along the railroads.

Among Roman Catholics in the upper Midwest, Irish-German is a very common ethnic mix. Irish immigrants were poor, and most were brought into the region to build railroads. They then settled the cheap or free land granted as a right-of-way to the railroad companies. German immigrants had more money, so they settled directly on the land. This was the case in South Dakota. I am almost of this mix, being Irish on my father's side and Luxembourg on my mother's side. Although Luxembourg is not strictly a German country, it played a central role in German (and therefore in European) history. In the fourteenth century, the House of Luxembourg produced a line of Holy Roman Emperors who were also kings of Hungary. The Holy Roman Empire was created by Charlemagne when he united the Germanic tribes and brought Europe out of the Dark Ages. When Charlemagne died, the western part of his realm became France and the eastern part became the Holy Roman Empire. Under the Luxembourg emperors, the Holy Roman Empire included all of modern Germany, Austria, Switzerland, Holland, Belgium, Luxembourg, Slovenia, and the Czech Republic, along with eastern France, northern Italy, and western Poland. Hungary included modern Hungary, Slovakia, Romania, Croatia, and Bosnia. So the House of Luxembourg ruled all of central Europe, with lands extending to the Baltic, North, Mediterranean, Adriatic, and Black Seas. By marrying into the House of Luxembourg, the Habsburg family of Austria provided Holy Roman Emperors and Kings of Hungary until the time of Napoleon.

I consider myself primarily Celtic and secondarily Teutonic. The Celtic part comes from both Ireland and Luxembourg. The ancient Celts inhabited Ireland and Britain and much of continental Europe for centuries before Christ, Cisalpine Gaul in northern Italy, Transalpine Gaul in France and Germany, Galatia in southern Poland and northern Spain, the Czech republic (Bohemians were originally Boii, a Celtic tribe), much of the Balkans, and as far east as the Ukraine and Turkey (Saint Paul's Galatians were Celts). Luxembourg was at the heart of this Celtic homeland. The Teutonic part comes from Vikings, Normans, and the Anglo-Saxon component of Englishmen who settled in Ireland, and from the Germans in Luxembourg.

The Irish have largely abandoned Gaelic, their Celtic language, and adopted English. There is a reason beyond five centuries of British invasions and settlements in Ireland. The greatest gift of Ireland is its literature and music, both Gaelic and English. I think there is an ethnic bond in both, despite the fact that English has virtually no Celtic grammar and vocabulary. English grammar is primarily Anglo-Saxon and its vocabulary is largely Latin, especially in the educational, legal, religious, commercial, medical, and scientific professions dating from the Norman Conquest in 1066, with additions of Greek in medicine and Hebrew in religion. Anyone who makes the effort will find common Celtic themes and structures in both English and Irish literature and music. I expect these themes exist to some extent in all the countries formerly occupied by Celtic tribes in Europe and certainly in lands subsequently settled by Celtic people, notably America, Canada, Australia, and New Zealand where English is spoken. Celts were the dominant ethnic group in Europe, especially Britain and Ireland, for many centuries and they spoke an Aryan

language common to all those countries which still speak Aryan languages, so that is where the common Celtic themes in literature and music will be found. In America, these themes are unmistakable in Appalachia and the Ozarks, which are heavily Irish.

After the close of the Indian Wars, the main obstacles to settlement in South Dakota were droughts and grasshopper infestations, the two often occurring simultaneously, especially in l865, l874, and 1931. When the grasshoppers came in July of l874, their swarms darkened the sun. People thought it was snowing, or that hailstones were hitting the roofs of their houses. Chickens and pigs ate grasshoppers until they couldn't stand. For over a year their flesh tasted like grasshoppers. One farmer, listening to the grasshoppers chewing up his cornfield, decided to give his starving chickens one last meal. He opened his chicken coops and the hungry chickens ran at once into the cornfield and disappeared. There was a great commotion and pretty soon the chickens came running out of the cornfield without any feathers. The grasshoppers were hungrier than they were. Grasshoppers crowded into the eyes, ears, and nostrils of horses and cattle, driving them mad. At one farm, a herd of crazed cattle ran off and was never found. Grasshoppers ate the clothes off the farmers' backs, devoured their crops, and then ate their fences, tools, and buildings. When there was nothing left to eat, the grasshoppers ate each other. Their bodies piled in great heaps around every window and door. Tornadoes would have been welcomed. Then they laid their eggs in the ground and flew off. The l874 infestation extended from North Dakota to Texas, and from the Rocky Mountains nearly to the Mississippi River. Even with that, there were boom years of ample rainfall, notably l868-l873, l879-l886, and l889-l9l0. By l9l0, a family was living on every quarter-section of land in South Dakota, even in the West River country. Since then, the land has become progressively depopulated as farm families moved into towns and because the natural West River rainfall and clay soil could not sustain agriculture over the long term, especially on small 160-acre homesteads.

The major distinction between eastern South Dakota and the West River country is not just the reduction in mean annual rainfall from 22 inches to l6 inches. The major distinction is that eastern South Dakota was covered by the great Laurentide Ice Sheet that l4,000 years ago blanketed all of Canada east of the Rocky Mountains, spread southward across the Great Lakes, and ended at the Missouri River. The ice sheet transported rich topsoil from Canada and deposited it over the Great Lakes states, and the Dakotas east of the Missouri River. Meltwater along the margin of this ice sheet eroded the Missouri River Gorge. Beyond the Gorge lay the clay soil eroded from the Badlands and deposited over the West River prairie. It could sustain grazing, but not farming. As a boy, I knew that rainfall was about the same in central South Dakota on both sides of the Missouri, about l8 inches per year, and I wondered why farming was possible on the east side but problematic on the west side. I saw the great granite boulders that were scattered over the farmlands, but not the ranchlands, and I knew that they were transported from Canada by the ice sheet. Little did I know that I would spend my adult life studying the dynamics of this ancient ice sheet by studying the present-day dynamics of the remaining ice sheets that cover Antarctica and Greenland today.

In Ireland, the surname "Hughes" is fairly common and is usually a corruption of the Gaelic surname "O'Hea" according to Edward MacLysaght, author of *Irish Families, their Names, Arms, and Origins* (Hodges, Figgis, and Company, Limited, Dublin, 1957) and former Chief Herald of Ireland. Padraig Giolla Domnaigh, in *Some Ulster Surnames*, states the Hughes sept (a genealogical subdivision of clans in ancient Ireland) in County Monaghan claims the Red Hand. O'Hart, a noted genealogical historian, tells the story. The Milesian king sailing off the Ulster coast said, "Whoever touches yon land first can claim it." One cut off his hand and cast it ashore, the Red Hand of Ulster. It's also called the Red Hand of the O'Neills because that clan was dominant in Ulster. O'Neills provided the High Kings of Ireland, ruling from Tara, for 600 years, the oldest and longest dynasty in European history. My wife, Beverly, is descended from the O'Neills. I like to think I'm descended from that one-handed Irishman.

My Great Grandfather, John Hughes, was born in County Monaghan, one of the Ulster counties of Ireland. Before the potato famine struck in 1846, he was working in Scotland on the estate of a knight to earn passage money to America. So he was less destitute than the famine Irish when he emigrated from Ireland in 1848, the worst famine year. He worked on the Erie Canal and saved enough money to go west, where he became a farmer in Scott County, Iowa, in 1852. I don't know what route he took from Ulster to Scott County, but I assume he sailed from Belfast to New York City. Then he would have taken a boat up the Hudson River to the Erie Canal along the Mohawk River. A boat on Lake Erie from Buffalo to Toledo

would take him to the continuation of the Erie Canal in Ohio and Indiana, where it was under construction in the 1840s. He could then have taken the National Road (the Cumberland Road) from Terre Haute to Saint Louis, and up the Mississippi by paddlewheel boat to Davenport and Scott County.

John Hughes had married a widow woman, Elisa Parks MacMurray, who was born in County Armagh, a neighboring Ulster county. He was a Catholic and she was a Presbyterian. I am living proof that these two types can get together at least once in a while, even if it takes a potato famine to pull it off. They had two sons, John Francis and Thomas B. (Bernard?). John Francis Hughes, the eldest son and my grandfather, was born in l856. Elisa had four sons and a daughter from her first husband, James MacMurray, Jim, David, Joe, and Jane. I dimly think John sent passage money to bring them from Ireland to Iowa, but I don't know. The oldest son, Jim MacMurray, came to the farmhouse one evening when John was away. He had to have an earnest talk with his mother. My grandfather was twelve at the time. As he told the story, Elisa said, "Let me see if Johnny is still awake." She looked into his bedroom. He pretended to be asleep, but then he listened through the door. Jim MacMurray berated his mother for marrying a Catholic, saying the Catholic Church was the Scarlet Whore of Babylon and the Pope was the Antichrist. Elisa had become more tolerant in America, but her son stiffened her Orange spine. From then on she reverted to type. Although she was a small woman, when the family took the buggy into town and passed a certain building, Elisa sat up stiff as a ramrod and asserted in her Ulster brogue, "And there's the grand Masonic Temple!" Many years later, my grandfather returned to the Iowa homestead with his daughter, Irene. They looked for his mother's grave and finally found it in Davenport, in the Masonic Cemetery. The name on the headstone was Elisa MacMurray. Irony of ironies, my parents are buried in the Catholic part of a Masonic cemetery just north of Fort Pierre, on what had been "Scotty" Philip's buffalo pasture.

Elisa's only daughter, Jane MacMurray, had become a Catholic. Jane married Johnny Kehoe. They had three sons, Martin, Joe, Leo, and two girls (names unknown). Her brother, Joe MacMurray, married Elisa (family name unknown), and they had three children, George, Harry, and Elisa. So the name, Elisa MacMurray, was carried for three generations at least. "Elisa" also survived in the Hughes line. John's brother Thomas married Elisa McDonald, and they had seven children, Lorretta, Johnny, Ambrose, Marie, Irene, Raymond, and Clemence. Thomas B. Hughes stayed on the Iowa farm and lived to age 94. I have several of his letters to John.

John F. Hughes was thrown from a horse when he was sixteen. His knee struck a tree stump and the wound became infected. His father took him to St. Louis for a life-saving operation. The physician who saved his life and his leg, was impressed and encouraged him to become a doctor. Instead, at age seventeen he began to teach in schools near Davenport and near his father's farm. One day Buffalo Bill Cody arrived and said that he had attended the same school as a boy. His visit inspired John F. Hughes to enter Dakota Territory when he was nineteen. He returned with the intention to study law and go back. After he was admitted to the bar, he returned to Dakota Territory in l882 to establish a law practice in Pierre and take out a homestead in the Bad River Valley just south of Fort Pierre.

That homestead was the beginning of the big Hughes horse and cattle ranch. Like other ranchers, he bought land in Bad River Valley for winter pasture, and then let his animals roam over thousands of acres of open range during the summer. There was a spring roundup to brand the new calves and a fall roundup to take cattle to market. Many of the horses were sold at auction to the big West River ranchers, who needed eight to ten horses for each cowboy during the spring roundup when all branded cattle and their calves on the open range were claimed according to the owners of the registered brands, and during the fall roundup when cattle were sent to market. The Hughes brand was the lazy-J S. He moved his family to the Bad River ranch in l90l, and began a four-year term as State's Attorney for Stanley County, with Fort Pierre as the county seat. Until 1914, Stanley County included Haakon and Jackson Counties, and extended all the way west to the Badlands, and from Cheyenne River in the north to White River in the south. He became heavily involved in the campaigns to move the Territorial Capital from Yankton to Pierre, which was founded in l880 on the east bank of the Missouri River opposite Fort Pierre, and to name Pierre the state capital after statehood in l889. The first Legislature met in Pierre in l890, but the debate wasn't settled until l904, when Pierre became the state capital and the county seat of Hughes County. John F. Hughes was elected judge of the sixth judicial circuit of South Dakota in l9l0 and remained on that bench until he died in l946. He faced election every two years. Hiram Johnson opposed

him several times and lost.

The name "Hughes" has been associated with central South Dakota since territorial days. All my life I have been asked if Hughes County was named after my grandfather. It was not. It was created in 1873, organized in 1880, and named after Alexander Hughes, who lived in Elk Point. I heard that he was related to my great grandfather, John Hughes, and he had urged John F. Hughes to come into Dakota Territory, but I no longer remember the source so I cannot confirm it. Two other Hughes boys, Tommy and Terry, were about my age and attended school in Fort Pierre, but we are not related. Edwin Hughes lived in Fort Pierre at the foot of Hughes Hill. His daughter, Colleen, was a year older than I and his son, Tommy, was a few years younger. Ed's brother, Glen, was a rancher and his son, John Terrence (I'm Terence Joseph), was a year younger than I. We both went by "Terry" and we could have passed as brothers, although he was taller and thinner than I when we were in high school together. Now he is no longer thin.

John F. Hughes (as my father called him) was of stern character. He had a slender frame, fierce blue eyes and jet black hair that had become white when I knew him in his eighties. His son, Kiran, told about the time when he was helping his father plow land for a garden near the ranch house. His oldest brother, Felan, had returned from college and rode up to announce that he wasn't returning to college in the fall because he was going to be a rancher. Then he rode off. John F. Hughes watched him for some time. Then he said, "If he's going to ranch he sure doesn't need a college education. Giddap!" Kiran said the horse nearly galloped as they plowed the next furrows. John F. Hughes turned over management of his Bad River ranch to Felan because his duties as a circuit court judge consumed much of his time, including riding circuit to county courthouses twice a year to preside at trials. His knee wound never healed properly and later in life, around 1932, that leg had to be amputated above the knee. In succession, children Francis, Kiran, Ret, Irene, and Josephine served as his court reporter. Johnny, Felan's son, tells the story of a trial John F. Hughes conducted at one of the circuit courthouses. The court chamber was at the top of a long flight of stairs, and John F. Hughes had a wooden leg. Here's the account in Johnny's own words.

Wooden Legs and Wooden Heads

This incident was one which I observed when I was asked to go to Gettysburg (I had heard it was Highmore, which was in the Sixth Judicial Circuit over which John F. Hughes presided) on the occasion of the sentencing of two young men who had murdered a school teacher while they were stealing her car. On a Friday evening, this young woman picked up two hitchhikers on her way home from school. One of them pulled her from the driver's seat and the other got her in the back seat of the car and clubbed her to death. They drove at high speed a short way, upset the car, and had to take to the cornfields. Before the sun went down, a group of local farmers captured the two and handed them over to the police at Gettysburg (Highmore?). This was before "Miranda and public defenders." They were guilty and pled guilty, and John F. was to impose the sentence.

As I recall the dialog on the stairway up to the court chamber, an old friend of John F.'s (whom I will call Bill) said, "Golly, Judge, I don't think of anything worse than a wooden leg," and John F. said, "I can't either, Bill, unless it's a wooden head."

There was considerable laughter and John F. said, "No! No! Bill, I did not mean you." This was the time when John F. was much quoted for another statement. When these two pled guilty, he put each of them on the stand and had them describe under oath the stealing and killing. They were from St. Paul or Minneapolis, and they were hitching to the West Coast where they were going to start a school for pickpockets. They were hitchhiking and the woman stopped so they just decided to get rid of her and take her car.

After their story, John F. said, "I am going to send a transcript of your testimony along with you down to Sioux Falls, so that if ever you attempt a pardon, the board will be obliged to read of your intent and actions." And in conclusion, "If it were not for the unmitigated dunces in our state legislature, we

would have a better solution to your problem."

Within two years, I think, and maybe less, South Dakota adopted the Death Penalty. The newspapers all carried John F.'s remarks. I also heard, at the sentencing, John F. added, "Instead, I have to 'reward' you with free room and board for life, courtesy of the taxpayers of South Dakota." One of them hanged himself in prison. The other was released when he was an old man crippled by arthritis.

Another account was written by Nick Lowrey in The Dakota Life section of the Pierre *Capital Journal* on 17 June 2016. The two Chicago punks were Norman Westberg and Howard Christensen, both 17 and school dropouts. At school, they planned to form a gang of pickpockets and murder the ones who were slow learners. Armed with a pistol and ball-peen hammer, and headed west by bus, stealing $127 on the way, and arrived in Watertown on 21 May 1937. They began hitch-hiking to Pierre. Ada Carey, a 26-year-old school teacher, stopped to give them a ride just north of Onida on Highway 83. Planning to steal her car, Christenson, in the front seat, shot her and Westberg, in the back seat, beat her head repeatedly with the hammer. She staggered from the car and Christenson shot her in the back. They shoved Carey in the car and turned off 83 onto a gravel road to dump the body somewhere. Not familiar with driving on loose gravel, they overturned the car coming too fast down a hill. The punks ran off, heading toward a farm house. Within an hour, Carey's car was found. Ada was still alive and she was taken to the hospital in Onida, where she told Sully County State's Attorney Francis Ryan what happened. A search party found the punks hiding in weeds, and took them to the hospital, where Carey identified the punks just before she died. The arraignment was on 4 June 1937, when my grandfather, because there was no death penalty, had to "reward" them with "free food and board for life, courtesy of the taxpayers of South Dakota" and "unmitigated dunces" in the State Legislature. In 1943, Westberg hanged himself in prison. Christensen had become America's longest-serving murderer when his sentence was commuted in 1995. He died a few months later at age 79. Justice was served.

That was John F. Hughes. My father told of a fight with his brother Kie that ended abruptly when John F. Hughes appeared and began raining blows on them both with his cane. Even with a cane and a wooden leg, he ruled the roost.

He was a staunch Republican. FDR offered to appoint him as the Federal judge in Sioux Falls, but he refused. His father, John Hughes, had registered as a Democrat in Iowa and, after becoming established, had decided to run for local office. However, the Democratic Party in Iowa was run by the Ku Klux Klan and wouldn't allow a Catholic on the ticket. John Hughes registered as a Republican and the Hughes family remained solidly Republicans until John F. Kennedy ran for President as a Democrat in 1960. The prospect of electing the first Irish Catholic to the presidency caused a split in the family. Felan didn't budge. I didn't know where my father stood. Their two sisters, Irene and Mary, liked Kennedy. At that time I had just begun graduate school at Northwestern University, and Irene had invited me to St. Paul, where she lived, and to ride with her to Pierre to spend Christmas with my dad and their sister, Josie. Mary (whom we called May) was joining us. When May arrived, Irene stacked the glass-topped table on her back porch with cans of 3.2 percent-alcohol Grain Belt Beer. I don't drink so I just watched. May and Irene were elated that Kennedy had won the election and, as the full cans became increasingly emptied, I began to think they were talking about the Second Coming of Christ.

"I'm going to be an American."

On 29 June 1886, John Francis Hughes married Ellen Agnes Feeney in Saints Peter and Paul Catholic Church in Pierre. Dakota Territory didn't record marriages, but the Church did. Ellen was born in Holly Grove, Ireland, on 2 February 1867, the eldest daughter of Patrick Feeney of County Galway and Margaret Connally of County Donegal. Thirteen children were born to this union, eleven of whom reached maturity. Felan was the oldest son, followed by Francis, Kiran (Kie), Leo, and Joseph. Another son, John, died when he was about two. I have a picture, eyes opened, of him in his coffin. Leo James Hughes was my father. The daughters were Helen, Mary (May), Katherine (Kit), Loretta (Ret), Irene, and Josephine (Josie). Josie's twin sister, Agnes, died in infancy. Ellen's uncle, Michael Feeney, was the track foreman for the extension of the Chicago and Northwestern Railroad into Pierre in 1879. Her father,

Patrick, who was Michael's brother, ran the stables at an estate in County Roscommon, near Holly Grove in County Galway but in a more prosperous part of Connaught, the western province of Ireland. One of his duties was to attend the Dublin Horse Show every year and trade horses. On one occasion, shortly before he died in 1877, he saw a green velvet dress in a store window that he bought for his oldest child, Ellen, who was ten years old. After Pat Feeney died, his brother Mike prepared to bring Pat's family to Dakota Territory in l880.

Queen Victoria was visiting Ireland for the second time in her 56-year reign (the first time was during the 1846-1850 potato famine, when officials ran off all the starving beggars along her route and whitewashed the buildings, so she wouldn't see the poverty of her Irish subjects). The town of Galway was on Victoria's route this time, and Ellen put on her green velvet dress for the occasion. She and her brothers, Andrew and Michael, and her younger sister, Mary, were standing on the roadside when the Queen's carriage went by. Ellen in her green velvet dress stood out from the others in their drab homespun attire, and Victoria ordered the driver to stop the carriage. She had Ellen brought over and complimented her on her pretty dress. Here is the exchange that then took place:

"And who are these other three?"
"They are my brothers and sister."
"Where are your father and mother?"
"My father is dead and my mother is a nurse and couldn't come."
"Oh? And are you going to be a nurse too?"
"No. I'm going to be an American."

That's the story as it has been passed on in the Hughes and Feeney families. I don't know if it's true, but if it isn't, it should be. That Irish colleen in her green velvet dress is my grandmother.

I don't know how Ellen, her mother, brothers, and sister got to Pierre. Presumably they sailed from Galway to New York, which was common for the Irish of Connaught going to America around 1880. Railroads at that time would take them from New York City to Buffalo along the Hudson and Mohawk Valleys, and from Buffalo south of Lake Erie to Chicago. From there, the Chicago and Northwestern Railroad would take them across southern Minnesota and into South Dakota to Mike Feeney's railroad Siding 6 at what is now the town of Harrold. From there they could follow the construction crew into Pierre in 1879.

The Irish of Connaught still spoke Gaelic in the 1880s. American railroad companies hired whole Irish villages to lay tracks across the western prairies to California. Patrick Hughes, would have spoken Gaelic and English, working for an English landlord (although he may have been an absentee landlord living in England, as many were), so his brother Michael probably did as well. It would have been an advantage for Mike Feeney as construction boss for bringing the C&NW railroad into Pierre. He could converse with management officials in English and in Gaelic with Irish laborers laying track into Dakota Territory.

Apart from bringing adventurers to the West Coast, railroad companies also profited from bringing settlers to the Great Plains, especially after the Indian Wars had ended. The U.S. Government created land grants along railroad rights-of-way that were sold to settlers at token prices or even given away free, under conditions of settling on and improving the land for a specified period. Along the C&NW right-of-way Federal grants were called preemptions. Many Irish laborers and their families claimed preemptions along these rights-of-way. Mike Feeney's preemption became the town of Harold. He and his family are buried there. Under the Preemption Act of 1841, up to 160 acres could be purchased for not less than $1.25 per acre, and the buyer had to reside on the land for at least five years.

John F. Hughes moved to his Bad River ranch in 1901 to raise his family. The ranch house was on the banks of Bad River, on the inside of a big meandering bend just south of Fort Pierre. The part of the ranch that was in the river bottom was about a section of land between a big rounded hill of sunbaked barren black shale called Black Top across the river to the east and a big grassy two-humped hill called

Camel's Back at the far end of the bend in the river to the west. In the summer of 1905, a cloudburst in the Badlands sent a flash flood down Bad River. It reached the Hughes house at night. John F. Hughes had to swim for the boat that he tied to a cottonwood tree and used to cross the river when he went to his law office in Fort Pierre, where he was the State Attorney for Stanley County. He rowed back to the house to get the younger children, and rowed them to Camel's Back that was across the floodplain. By the time he got back to the house he had to take the remaining family members from the second-story windows. As he pulled away, the house popped up in the water and headed downstream. They watched it disintegrate in the swirling current. They spent the night in the old Hollenback house behind Camel's Back that had been abandoned when I was a boy.

John F. Hughes built a new and bigger house on a high hill on the Fort Pierre side of the river that became known as Hughes Hill. He brought Ellen's cousin, Owen Lohan, over from Ireland to level the hillside on the town side, using a scoop hitched to a team of horses. The house was built there, just outside of the town limit. It was considered a showplace. It had hardwood floors, big plate glass picture windows that had colored glass inlays and faced the town, large interior rooms separated by big hardwood pillars, and a wide hardwood-paneled staircase to the upstairs bedrooms. A Steinway grand piano that daughter Helen played was in one of the big downstairs rooms, and is now in the state governor's mansion. My father bought a smaller house at the bottom of the hill and just inside the town limit. I spent my early childhood there. We called it the Little House and the John F. Hughes house on the hill the Big House.

I cherish a handwritten letter from my grandfather written to me on my first birthday on official stationery from his court chambers. Here it is.

COURT CHAMBERS
SIXTH JUDICIAL CIRCUIT
HUGHES, HYDE, SULLY, STANLEY, HAAKON, AND ARMSTRONG COUNTIES
JOHN F. HUGHES, JUDGE
FORT PIERRE, SOUTH DAKOTA

February 15,
1939
Master Terry Hughes
Fort Pierre, S.D.

Dear Grandson:

You are now getting to be quite a man and should be starting in business, so we enclose you 100 cents to aid in any enterprise you may undertake. We wish you many, many other Birthdays.

Your affectionate
Grand-parents

I barely remember my grandmother, Ellen Agnes Feeney Hughes. She had kind eyes and a large frame. After Mike Feeney brought her, her brothers Mike and Andy, and her mother Margaret to Dakota Territory in 1880, they all took out homesteads. Ellen's was a quarter section of land in the Bad River Valley bordering Willow Creek. The great Sioux medicine man, Chief Sitting Bull, is said to have been born there. She never lived on it and no buildings were constructed. Andy's was farther up Bad River. He turned it into a working ranch with a log house, barns, and corrals he built himself. Mike acquired land on the high plains south of the Cheyenne River breaks, on a creek that became known as Feeney Draw. He also built a house and barns of logs. The house had red cedar logs one and two feet thick with white caulking between. A covered porch ran all along the front side. It was a showplace in that remote part of South Dakota.

When Ellen died on 5 October 1942, John F. Hughes moved back into his house in Pierre and we

moved up to the Big House. I remember our visits to the Pierre house and the heated arguments between John F. Hughes and my father. When we left, Grandpa Hughes always gave my older brother Leo and me a dime each. Our last visit was just after John F. Hughes died on 8 January 1946, days short of 90 years old. I remember seeing his wooden leg in the corner of a room, and my mixed feelings of curiosity and awe.

His sons, Kiran (Kie) and Francis, were in separate units during World War I but they met in France somehow. That meeting was the basis of a charge that they planned to go AWOL, a charge that John F. Hughes managed to get dropped. They seemed to be benighted young men. They got a reputation as carousers after the war. This included drinking and playing cards with one of the Tolton boys in the house occupied by the Quentin Sutley family when I was a boy. It was near the Big House on Hughes Hill, but inside the Fort Pierre town limit. The Tolton boy was later found dead on the railroad tracks near the Bad River railroad bridge a mile south of the Hughes house. He had been run over by a train. The story from the Hughes side is that Tolton passed out on the tracks when he wandered off after the card game broke up. The story from the Tolton side is that he was knifed by one of my uncles, Kie or Francis, in a fight that broke out while they were playing cards, and they dumped the body on the railroad tracks. In any case, Ellen gathered all her daughters to pray rosary after rosary during the subsequent investigation. I'm told that a large blood stain can still be seen on the floor in the room where they played cards, but when I was a boy the Goodwins and Sutleys lived in that house, and I was inside many times because they had kids about my age. David Goodwin in particular often played baseball with Leo and me at a ballpark we built on the most level part of Hughes Hill. None of them mentioned a bloodstain and I didn't even know about the Tolton tragedy. No trial took place. The tragedy didn't affect my grandfather's numerous re-elections as Circuit Court Judge. I was told he had opposition from a lawyer named James Calahan.

In the summer of 2012 I learned the real story from accounts kept in a large trunk in the basement of the Big House that I had taken to Maine and back to Fort Pierre after I retired from the University of Maine. In it were cancelled checks written by John F. Hughes, real estate and court documents, and many family letters. These included the Last Will and Testament of John Hughes, his Iowa farm going to his wife and two sons in equal shares, the deed to the homestead purchased by Margaret Connally Feeney north of Pierre, and the will of James "Scotty" Philip giving his herd of 800 buffalo to his heirs, with J. F. Hughes as executor. Several documents dealt with Tolton's death and the subsequent murder charges.

On 12 July 1922 Bob Tolton and five young men were singing, playing cards, and drinking late at night in the Hendrickson house, when that family was absent. It was the Prohibition Era, so drinking alcohol was a crime. Fort Pierre had always been a saloon town so drinking went on, even among young boys. The revelers were boisterous so Ellen Hughes sent her daughters Helen, Ret, and their friend, Mina Porter, into Fort Pierre to have Sheriff Samis investigate. He had James Calahan, States Attorney for Stanley County, secure a search warrant from L. K. Goldsmith (Justice Of The Peace?). Before they arrived Ellen Hughes had met Kie outside the Hendrickson house and returned with him to the Hughes house. When the sheriff and Calahan arrived with deputies Carlisle and Giddings, two revelers had passed out inside and Tolton jumped out through a window. Calahan apprehended Tolton in the nearby Hughes vegetable garden and, seeing who he was, left him there and went back inside. The commotion continued, so my grandmother and Kie followed Ret, Kit, and Mina in going to the Hendrickson house. Helen stayed on the east porch of the Hughes house and saw Tolton get up and head for the railroad tracks. She joined her mother, Kie, and sisters outside the Hendrickson house and told Calahan what she saw. Calahan told her he thought Tolton was too drunk to run away. As they were leaving, the eastbound passenger train roared through.

The next morning Calahan, the sheriff, and the coroner found Tolton's bloody body dismembered on the railroad bridge a mile south of the Hendrickson house. There was vomit next to the body with a trail of blood and gore going back toward where Bad River Road crossed the railroad tracks. The vomit smelled of alcohol. No inquest was held, as the death was deemed accidental. The revelers appeared in the local justice court, pleading "guilty" to intoxication but not to possession of booze. People in Fort Pierre had already massed in the County Courthouse to protest lax enforcement of the prohibition law, and calling for Calahan, the sheriff, and the mayor to resign from office. Calahan reacted by arresting the surviving revelers and, one by one, charging each with murder, including Kie, and getting the Justice Of

The Peace to impose bail bonds of $10,000 on each one, pending their Circuit Court trial in October. Calahan claimed he had evidence one of them struck Tolton on the head with a chair, killing him, then they put the body in a car and dumped it near the railroad crossing where he saw tire tracks. This after Calahan had already told his deputies, my grandmother, and aunt Helen that he had apprehended Tolton in the Hughes vegetable garden. My grandfather was Circuit Court Judge so he recused himself for the trial, after he had the bonds reduced to $2000, as ordered by the presiding Supreme Court Justice for Kie's bond. The Supreme Court appointed Judge Miser of the Seventh Judicial Circuit to preside at the trial.

During this time, brother Francis had been at the Disabled War Veterans School in Minneapolis. Two days before the scheduled October trial, Calahan had men from the Baldwin and Andrews Detective Agency in Saint Paul take Francis at gunpoint from his wife and child at their apartment to police headquarters in Minneapolis, where he was jailed for a week on the charge of murdering Tolton, before being transferred to the Stanley County jail. The transfer included getting Francis, an alcoholic, drunk and in an Agency car to the South Dakota border. There he would be arrested for stealing the car and told the theft and murder charges would be dropped if he testified against the defendants at the murder trial. Francis and two other defendants had not even been in Fort Pierre when the alleged "murder" occurred. Francis refused so he too was charged with murder.

At the 8 October 1922 trial, Calahan refused to present evidence a murder had taken place and moved for a postponement. The defendants and their lawyers insisted on being afforded a speedy trial where they could defend themselves with their own testimony and evidence. The Supreme Court ordered Judge Miser to hold the trial on 14 December 1922. Calahan didn't appear, so Miser postponed the trial until 16 January 1923. On that day Calahan had no such "evidence" to present, so the case was dismissed and the defendants were deprived of a trial by jury to clear their names. My grandfather petitioned the Supreme Court to have the case State v. Hughes, et al. tried in the Sixth Judicial Circuit Court. The Supreme Court set 13 March 1923 as the trial date, Judge N. D. Burch of the Eleventh Judicial Circuit presiding. I don't know what came of this.

Calahan continued making his charges in public and to the press. He insisted he was the one who wanted a speedy trial and the defendants were blocking it, with the aid of Judge Hughes in an attempt to save his two sons. Calahan was backed by wealthy and powerful men in Pierre and Fort Pierre who could and did manipulate public opinion to "convict" the defendants so an unbiased jury was unlikely. These conspirators formulated charges to impeach my grandfather in the State Legislature. "Witnesses" appearing at a House hearing testified they had no personal knowledge that justified impeachment, only what they heard from others whom they didn't identify. The House unanimously dismissed the charges.

Then the conspirators got a Senator to introduce a bill to remove two counties from my grandfather's jurisdiction as judge of the Sixth Judicial Circuit, one being Stanley County where he lived, which would force him to move. The bill passed in the Senate but the House defeated it by a vote of 100 to 2. In addition to Calahan, the conspirators were Burg Brown, L. K. Goldsmith, H. H. Giddings, Andy C. Ricketts, W. R. Dean, Robert Jennings, Frank R. Strain, Fred S. Rowe, and Ray Robar. Most (all?) were Freemasons. My grandfather was a Roman Catholic.

Early in 1924 the Supreme Court considered disbarring Calahan. The Attorney General of South Dakota argued that Calahan had acted in "good faith" and the Supreme Court cleared him. Kie petitioned the Supreme Court on 1 March 1924 to rehear the disbarment case. He cited three other cases in addition to the Tolton case. I don't know how his petition fared, but Calahan was still trying to get the Supreme Court to disbar my grandfather in 1925 after he refused to sentence a young man arrested for drunkenness near the Fort Pierre stockyards.

Leo and I knew Kie best because he had a law office in Fort Pierre. Kie visited us on many occasions and hired us to tend the grounds around his law building. Francis died in 1936 and we never met him. We were washing the windows on the old Stockgrowers Bank Building in Fort Pierre one summer when a woman called up to us on our ladders. She said she was our cousin, Phyllis. Francis was her father and his wife, Ruby, was her mother. We didn't even know he had married and had a family. Many years later, on 28 January 2003, Felan's son Johnny wrote me from Alaska, "Phyllis was a fine-

looking girl. Phyllis was born about 1919 and she was at the University of South Dakota when I was a senior." The Toltons had married into the Nemec family. The Nemecs ranched in the Bad River Valley near Midland in southeast Haakon County. By a curious coincidence, Winifred Nemec married Arthur Bergeson, and they raised their family in the old Hughes Big House after they bought it from the Kleinheksels, who bought it from Paw after he suffered a stroke in 1964. My wife Bev and I became close friends of Winnie and Art Bergeson, even though we lived in Maine. My brother Leo has visited them too. From Winnie, we got the false account of the card game with Kie and Francis that has been passed down in the Tolton family. The Bergesons sold the Big House to the Swansons, and moved to a smaller one-story house on the Missouri River north of Fort Pierre. Bev moved to Fort Pierre in 2004 to avoid allergies that afflicted her in Maine, and I joined her permanently in 2009 pending my 2010 retirement from the University of Maine. We remain close friends with the Bergesons and the Swansons. All of us consider the Big House as "our" house, as it housed all our families.

Ellen and her sister, Mary, liked to paint landscapes in oil or water colors. Ellen painted a picture for each of her children. My brother, Leo, has the painting she gave to our father, a winter scene of a log cabin in the woods. I have two of Mary's paintings, mountain and ocean landscapes. I must have inherited some of their talent, because I like to draw and paint too. I took a few lessons from Mary Porter, who lived in Fort Pierre in a big house at the bottom of Hughes Hill. She was an old woman so bent over from arthritis that she had to walk backward to see where she was going, because her head was between her knees and her face looked behind her. By the Steinway grand piano in the Big House was a large framed painting of two small children on a forest path. A coiled serpent was at their feet and a guardian angel hovered above them. The piano went to the governor's mansion in Pierre and Leo got the picture.

Mary Feeney, whom we called Aunt Mary, never married. She operated a hat shop in Fort Pierre, and lived in the Big House. About the time of John F. and Ellen's golden wedding anniversary in 1936, their daughter Kit Harper arrived with her young son. Early one morning, he came running into Aunt Mary's bedroom. "Good morning, Benny," she said, "and how are you feeling today?" "This is how I feel," he said and then he peed on her. After Aunt Mary died, some people who used her bedroom reported strange happenings, including apparitions. Both Irene and Felan's eldest daughter, Ruth, told about a playful but benign presence. Many people have lived in the Big House since then. Several of them, especially Art Bergeson and my older brother, think the house is haunted. Art said faucets and lights would turn on and off by themselves. I lived there for 18 years and I never noticed anything of that kind. My brother, Leo, did and he is convinced the ghost may be Josie's twin, Agnes, who died in the Big House. Aunt Mary died in Saint Mary's Hospital in Pierre.

Cousin Benny had another moment of fame in 1936, the year Leo was born. FDR was in Pierre during a trip to drought-stricken parts of South Dakota. The Harpers were in the McKay-Kelley Drug Store to visit Kit's sister, Josie Kelley. Everyone but Benny went outside to watch the Presidential motorcade go by. When they went back inside, they discovered that Benny had tipped over the big popcorn machine, the glass dome full of popcorn was shattered, and popcorn was all over the floor. I was told that Benny had an IQ that was off the charts, but he was too unstable to make use of it. Leo and I visited the Harpers in Ocean City, Maryland, after Bev and I moved to Maine. Leo's youngest daughter, Erin, was representing Washington State in the annual spelling bee held in Washington, DC (she bombed out when she couldn't spell "discerp"). Kit was living with her children, Benny, Kay, and Johnny (who was an ordained priest, but not functioning as one). They owned a rundown motel called Shady Rest. I will refrain from mentioning that it reminded us all of the Bates Motel in the Hitchcock movie, *Psycho*. They lived in a big house not unlike the one that Norman Bates and his "mother" lived in. Benny was weird, weird. They all were. Years later, Bev and I visited them again on Benny's sixty-fifth birthday. We took them all to supper. Benny ordered breakfast (and got it). I have family albums that show John F. Hughes as an old man. There is a wild look in his eyes. Benny has that look. So do I. In 2012 we learned Benny had died in an insane asylum and the Harper estate was going to us and other cousins. I got about $5000.

Certain daughters of John F. and Ellen Hughes, living in the Big House overlooking Fort Pierre and being daughters of a Circuit Court Judge, could at times be counted among those shanty Irish who had "white lace curtain" pretensions. The oldest, Helen, hired a genealogist to trace back the Hughes family in Ireland. Once when the family was gathered around the big table for supper, John F. asked her for a

report. She said the genealogist got back only two generations before he hit a dead end. John F. said, "He could have gone farther. He just didn't want to tell you." "Tell me what?" "He found the horse thief." Irene married a Virginia colonel who was also a medical doctor. Ret had a beautiful singing voice and went to Chicago to study opera, but married an engineer instead. Their son, James Harvey, became a playwright, author, and art critic in New York City. Kit married a Washington bureaucrat in the Department of Agriculture. They owned a motel in New Jersey. May married Hans Wagner, a dentist whose practice was in the East River town of Parker, where May taught music. Theirs was an Irish-German match, quite common among Catholics in South Dakota, but May's first love was George Olson. The Olsons operated the ferry boat between Pierre and Fort Pierre before the Missouri River bridge was built. They were a Swedish Lutheran family and back then Catholics and Lutherans rarely married. In the 1970s May and George attended the same reunion of Fort Pierre/Stanley County High School graduates, both were single, the spark was still there, they married, and lived happily ever after.

People in Fort Pierre who lived on the banks of Bad River were called "river rats" by the hoity-toity element in town. Some of the Hughes girls used that description during one of the family meals. John F. said, "You were a river rat before the 1905 flood took out our house on Bad River and those river rats put the food on this table. Your father is an elected judge kept in office by the votes of river rats." End of discussion. Josie, the youngest Hughes girl, never voiced hoity-toity views as long as I knew her. She married Frank Kelley, another shanty Irishman, but he was among the most gifted athletes South Dakota ever produced, holding two world-records in the indoor high hurdles. He became a pharmacist in Pierre and coached the baseball team to five state championships. Frank had a cabinet full of medals and awards, but close friends remember his practical jokes. My first cousin one step removed, Pat Feeney, related one. Frank, Charlie Hyde, and a local judge were playing cards. An "argument" ensued between Frank and Charlie. Frank left the room in a "rage" and came back with a pistol (it was the one that started races at track events and fired blanks). He "shot" Charlie, who fell back "dead" with a large red splotch on his chest (it was catsup). The judge was aghast and left the room in a panic, thinking he'd just witnessed cold-blooded murder.

All of the John F. Hughes children, including the girls, attended college. That was unusual back then. All the sons except Felan and Francis became lawyers. Felan wanted to go to Australia, but John F. Hughes prevailed on him to stay in South Dakota and manage the Hughes ranch. When Felan's son, Johnny, graduated from law school and wanted to seek his fortune in Alaska, Felan remembered his own hopes of going to Australia and gave Johnny his blessing. By the time he retired, Johnny had the biggest law firm in Alaska. Felan was my Godfather. He married a redhead named Florence Chamberlain, from a family in Maine that, we were told, was related to Joshua Chamberlain, the Union hero at the decisive Civil War battle of Gettysburg. They started their own ranch near Lacy, a hamlet northwest of Fort Pierre at the head of Willow Creek (pronounced "Crik" in Stanley County), which empties into Bad River about three miles southwest of Fort Pierre, where John F. Hughes had owned another section or so of land. When my brother Leo and I visited them, Felan and I paired against Florence and Leo to play Canasta and Samba. Florence came to South Dakota from Wisconsin to teach school. She wrote a book about ranch life with Felan. It mentioned his physical appearance only twice. The first time was when she first saw him riding into town, and how "tall and handsome" he was in the saddle. The last time was on the ranch years later, when he had knocked over the cream can that Florence had just filled after running the day's milk through the cream separator. She wrote that she grabbed the mop and bopped Felan over his "bald head."

John F. Hughes moved into a smaller house in Pierre after Ellen died in 1942, and Paw moved us into the Big House on Hughes Hill, so that's where I lived when I started school that fall. Maw took a picture of me carrying a *Pinocchio* book to school on my first day. The top of Hughes Hill was between Bad River and the Big House. From the top we had a grand view of Bad River Valley and the Hughes ranch to the south and of Fort Pierre to the north. Leo and I flew kites from the hilltop that the wind carried across the south side of town to where Bad River divides Fort Pierre. We also built a "fort" on the hilltop. I used an old cylindrical gas heater with an off-center pipe at one end, mounted it on a swivel in our fort, and pretended it was a machine gun. On the east side of the hilltop, Hughes Hill was lower and much flatter, so we played baseball there in the summertime. In the wintertime, snowstorms from the north created big drifts on the southern brow of Hughes Hill facing Bad River. We dug out rooms connected by tunnels in the drifts. Paw had his barns and corrals on level ground on the west side of

Hughes Hill facing the railroad tracks. Paw planted corn on the floodplain between Hughes Hill and the railroad tracks. He planted potatoes and other vegetables on the higher level ground on the east side. Paw owned a big empty lot inside the town line at the front of the Big House. Our sidewalk crossed the lot from the front porch to steps going down to Wandel Avenue, the first street in town.

Wandel Avenue is not to be confused with Waldron Street, which meets Verendrye Drive at the intersection with "North Sixth Street" (no street sign) to the house where my wife Beverly and I lived after we bought it from Nyla Tibbs, the widow of Thad Tibbs, brother of Casey Tibbs, Rodeo Cowboy Champion of the World when I was a teenager. Waldron Street is named after an ace Sioux fighter pilot who died in the Battle of the Coral Sea during World War II, as is the bridge over the Missouri River connecting Pierre and Fort Pierre.

Paw kept two horses on Felan's ranch. When Leo and I were old enough, Paw brought them to our ranch south of Fort Pierre and he gave the gelding to Leo and the mare to me. The gelding was "Starface" because he was brown with a white star on his forehead. The mare was "Blackbird" because she was jet black. She had an oversized, badly gnarled front hoof. I told the town boys that she was a killer horse and used that hoof to cut up other horses in fights. She gave birth to a beautiful palomino colt, so I had two horses. Eventually Paw sold them all. I expect my "killer horse" was bought by a dog-food manufacturer. Felan had hired Bernie Duffy to "break" Paw's two horses before they were brought to our barn and corrals on Hughes Hill. Bernie was a son of Ed Duffy, who owned the big house on the West Side of Fort Pierre at the foot of Verendrye Drive. Most of the Duffy children had left home by the time I was a boy and the Duffy house had become a home for housebound elderly people, one of whom was my great uncle, Andy Feeney. Maw brought Leo and me to visit Uncle Andy several times each year when we were boys.

Many years later, in 2007, Bernie told me he had wanted to be a cowboy when he broke the horses for Felan. Instead he became a successful trial lawyer, and has served as superintendent of Stanley County High School. Bernie and his brother Ed were tall and big-boned, same as their sister Evangeline, who was Maw's housekeeper at one time, until she "waxed" the kitchen floor with furniture polish. Ed was active in bringing rodeos and horse racing to Fort Pierre. He died in 2013.

A wanderlust seems to grip the Hughes clan. When I attended a scientific symposium in Yakutat, Alaska, in June of 2002, I and two graduate students visited Felan's son Johnny in Anchorage. By then he was 85. We met in a downtown hotel lobby because his wife Margurie was ill in their house (she died a few years later). In the hotel lobby Johnny told us how he decided to go to Alaska. A year later I wrote to ask him to write down his account. In his own conversational style, here is what he sent. Johnny is quite a story teller. He's still alive as 2013 draws to a close. His health is failing but his mind is clear. Johnny's daughter Mary Kay looks after him.

North To Alaska

You have asked for a yarn about my first trip to Alaska and here it is. I graduated from Eastern State Teachers College at Madison in the spring of 1935, and taught at Mores County School for the term 1935-1936, being paid in twenty-year warrants that could not be cashed, as the banks and Fischer's (Fischer Brothers' General Merchandise in Fort Pierre) had all they could carry of six percent paper, 20 years behind payment.

The only option was to trade the warrants in at the University (of South Dakota) for tuition. I could enter law school as a junior, but my teaching credits were not sufficient to qualify for junior status there. I went one semester at Vermillion before I could enter law school mid-term with the class due to graduate in 1939, which left me one semester shy of graduating in 1939. It caused me to come back for one semester in the fall of 1939 and graduate in January of 1940, with no place to go in mid-winter.

In the 1930s many flatlanders had gone to California and it was a rare Dakota lad who had no friend or relatives in California. I found that friends were more reliable for bed and board than relatives. I shipped a foot locker to my aunt at 152 Riva Alto Canal, Long Beach, and headed for California with about $110 in my money belt. When I got to a friend in Santa Ana ten days later I was told by my aunt

that the foot locker had to go, as she had no room in her garage for such a bulky item. My foot locker stayed with a friend for several months and arrived in Kodiak (Alaska) in spite of its poor California reception.

After a few days in California with friends, I moved up the coast on US 101. February of 1940 found me in Seattle living on 75 cents a day, board and room, with continuous drizzle, clouds, and no one to talk to. The streets, First and Second Avenue, were full of people, many less fortunate than me. I adopted a practice of cleaning myself up each morning and going to the Alaska Steamship office on First Avenue,

"What is the price of a steerage ticket to Juneau?" Next day, "What is the price of a steerage ticket to Seward?" Next day, "What is the price of a steerage ticket to Petersburg or Haines?" I was getting close to the minimum when one day the sun came out, a real beauty, and I felt fine walking up to the Alaska Steamship counter where the girl said without me asking, "The steerage ticket to Ketchikan is $35. The *Kanaw* (*Lacckinaw*) sails tomorrow at 9 AM and you better be on it." "Thank you ma'am." At last someone knew me and I was walking on air.

As I headed to the flophouse where I was staying, I came to an intersection with a stoplight. A young man driving a Chevy coup had his arm out the window. He looked up and smiled at me as he waited for the light. I was still on a high, having had a nice experience with the Alaska Steam counter girl. I stuck out my hand and said, "By God, mister, I want to shake your hand. My name is Hughes." "Mine is Breen," and he is still smiling. "You are the first man in this town who has given me a pleasant look and I thank you." He lost his turn at the light and was still smiling, so I kept on. "I am just as green as a pea but I want to go to Alaska. I can't find anyone who will talk to me. Where can I find such a person?"

Breen said, "I am going out to Fisherman's Dock below the Bullard Bridge. I'm not supposed to have riders but get in and I will take you out to see Jimmy Fox, the Port Captain, but don't say that I brought you. Just talk to him."

"OK, OK," and I was in the passenger's seat so fast I nearly left my pants on the curb. True to his word, he delivered some mail and papers to Captain Jimmy Fox with a short, "Cap, this young fellow would like to talk to you," and out he went.

Captain Fox said, "Yeah, young fellow, sit down," real gruff, and he went about his papers for some time. I thought he had forgotten me. Then, "Yeah, young fellow, what can I do for you?" "Skipper, I am a flatlander from Dakota and I want to go to Alaska, but no one wants to talk to me." "Who do you know in Alaska?" "I don't know anyone but I can get acquainted." "What kind of work do you do?" "What do you have to do?" "Do you belong to a union?" "No, but I would join if asked." "Have you ever been to sea?" "No, but some of my folks have." "Do you have living folks?" "Yes." "Could you get home?" "Yes, but I don't want to go home. I have been there."

"Look, young fellow, I see a dozen lads like you each week. You can't do anything. You don't know anyone. You are doomed to get ironed under. Go home before it's too late." There I was, the man had talked. I had flunked the course. I had to do something and I thought the skipper felt a bit sorry for me. All may not be lost.

"Skipper, I have answered your questions. Will you answer some for me?" "Sure, kid. Go ahead. Shoot." "Where were you from before the west coast?" "Orphine, Idaho." "What were you doing in Idaho?" "I had a stump ranch and ran some sheep." "When did you come to the coast?" "1926." "Where did you land?" "Portland." "What did you do in Portland?" "I worked at whatever I could find until I got a job on a tug boat and ended up here on Elliot Bay in Seattle." There were a few more questions but the answers indicated anything but the Glory Trail.

"Skipper, just one more question. What you have told me does not sound too great. Why didn't you go home in 1926?"

"By God, kid, you just might make it! It just comes to me that Johnny York who owns the *Gloria West* does tramp trading during the summer. I saw him out on the dock this morning. He sometimes takes

'workaways.' Why don't you go talk to him?" "Thanks, skipper. Just point me at him." "Out on the dock and turn a hard right."

Johnny York and the *Gloria West* were there, and the rest is History.

I should add that in his case "history" was founding and running the largest law firm in Alaska.

In the Patrick Feeney family, Ellen and Andy were tall and big-boned, like their mother, Margaret. Mike and Mary were smaller. Ellen, Andy, and Mike left for Dakota Territory and arrived at Siding Six of the Chicago and Northwestern Railroad in May, l880, where Pat's brother, Mike Feeney, had the only house between Huron and Pierre. He sold his preemption land to a man named Cavanaugh for $3000, who platted it for a town named after Harrold McCullaugh, an officer for the railroad. That's how Siding Six became the town of Harrold. In 1883, Mike married Johanna Brett, who was born in County Cork in 1853, and they raised four sons on his ranch, James, Harry, John, and Willie. Mary Feeney was too young to make the long journey from Ireland, so she came over alone a few years later when she was ten, after Margaret, Ellen, and Andy had moved to Pierre in 1886. I cannot imagine what it was like for Aunt Mary to make that Atlantic crossing alone, and travel another 2000 miles overland alone, at age ten, to Dakota Territory. Margaret bought a farm three miles northeast of Pierre in 1887. Sometime around 1960, Felan showed Leo and me the location of Margaret's farm. The cornerstones of her house were still in place. She had been Margaret Connally, born in County Donegal. In 2012 Bev. and I got an e-mail message from a Connally lady descended from her.

Andy and Ellen acquired separate ranch holdings on Bad River. In l892 they all moved to the Feeney ranch on Bad River, fifteen miles southwest of Fort Pierre. Like all ranchers back then, their cattle grazed on open range. Andy built a log house and barn from big cottonwood trees on his 640 acres. These buildings were still in use when I was a boy. Kevin Costner visited the place when he was looking for locations to film parts of his movie, *Dances With Wolves*. Andy had a big frame and was over six feet tall. He became Sheriff of Stanley County. It was the original Stanley County, from the Missouri River to the Badlands east-west and from the Cheyenne River to the White River north-south. His first detective work was hunting down a murderer named Kunnecke. Here is his account, as he related it to my mother on 29 November l951, when he lived in the Ed Duffy house in Fort Pierre. The request for his account came from Bert Hall, for inclusion in Hall's book, *Roundup Years—Old Muddy to Black Hills* (1954, State Publishing Company, Pierre). Andy had arthritis in his fingers and couldn't write. In a postscript to the account, my mother wrote, "I tried to write this as he told it. I am sorry if it is difficult to read the scribble." Here is his account, as it appears on pages 306-309 of the 1956 Second Printing.

Andy Reports A Gruesome Case

Dear Mr. Hall:

I received your letter some time ago and this is the first time I've had someone here to write for me. Leo Hughes' wife is here doing it for me. I had the flu this wee fall and was hospitalized for over a week; although I feel better, I'm not over it yet.

In regard to that Kunnecke case: Back about 1903, in the fore part of March when I took office as sheriff, Kunnecke was the second person that I arrested. An old Indian was the first victim. I received a letter from Will Rohrbecker of Allison, Iowa, telling me he thought Kunnecke had made away with Andy Danler, his sheep herder. I answered, asking for details, so I could go out to investigate. In due time Rohrbecker's reply came. He stated that when he was at the Kunnecke sheep camp he had noticed blood on a sled near the yard. While stopping to examine the sled, a dog came up, sniffed at the blood stains, then ran rapidly toward the house. This made Rohrbecker suspicious that it could be the blood of a human.

Danler had not shown up. I didn't know Kunnecke, but when I arrived at the ranch on horseback I asked the man there if he were K. He answered in the affirmative. I asked K if Andy had worked for him. His replies were evasive. He admitted that Andy Danler had worked for him but he'd quit now. I asked him

where he had gone and he answered, “Towards Pierre.” “Was he afoot, on horseback, or how did he leave?” His reply was, “He went on foot to Pierre and from there he planned to go to New York City.”

I told him he’d never reached Pierre and hadn’t stopped at any of the road ranches between the place and Pierre. As deep as the snow was, he couldn’t have made it between there and Pierre without stopping. Of course, this was just bluff on my part although it was true as we learned later. I asked if there were any old wells or holes that he could have fallen into. He hemmed and hawed around saying, “Yes” and “No.” I went around with the other sheep men living near by looking but found no such holes. As I was riding around in the breaks of Cottonwood Creek, I saw K over in the distance. I overtook him and told him the men hadn’t seen Danler.

The next day I again left Hayes to K’s place. I saw him again and headed him off and again questioned him but he said Danler probably had gone already to New York City. He admitted after questioning that D had some sheep and horses but he, K, had bought them too. I again talked to the herder. He hadn’t been there very long and knew nothing of Danler, but I told him what was up. The herder wanted to quit immediately but I persuaded him to stay on as long as we were around for nothing would happen to him. He knew something was wrong however for during the storm K had turned up and was worried about sheep and appeared very nervous.

The next day we saw three wagon tracks instead of two going over the east Plum Creek trail. Then I dismounted and saw where one wagon track pulled a foot or two out of the road. I found K’s tracks in the snow and followed them to a water hole nearby. Henry Schack was with me. There was fresh dirt that had been dug up. I sent two of the boys after a spade while we started digging with our hands. Before the boys returned we had removed the dirt from the shallow grave. K had placed him there and had pushed the dirt from the bank over him. The print of one foot showed in the dirt for he had brand new overshoes on. But there was no body. When I saw that, I called the rest of the men, six men and two boys, age sixteen. They returned and I pointed to the grave. We could see that Kunnecke had moved Danler and covered the shallow grave carelessly. Then we again followed K’s wagon tracks and we overtook him some three miles from the grave.

He had moved Danler’s body from the shallow grave by the side of the water hole, and was now returning from the place where he cached it the second time about l5 miles away. Then it was that we saw him returning. I rode my horse right up in front of his team to stop him. He was sitting on the footboard of the wagon box. I said to him, “Mr. Kunnecke, you’re working late and early these days, aren’t you?” He must have been out all night that time. He replied that he wanted to get a little wood while the road was frozen, but all he had was a couple of arm loads of dry ash in the wagon box, which belied his words. I said, “What did you do with that corpse?” He replied, “I didn’t have a corpse.” I said, “You get off that wagon, and I’ll take care of you.” With that I rolled off my horse and started forward to search him for firearms. He got off the wagon and I called my men to search him, but he was unarmed except for an old broken jackknife in his pocket and an axe in the wagon.

Then I took Louie Olson’s saddle horse and commanded K to mount. He insisted that we all go down to his house for dinner. I refused. He said that he would eat at home anyway. “Listen here,” I said, “if you don’t do as I say, I’ll hog-tie you and throw you in your wagon box and take you to Fort Pierre.” Hearing this, he said, “I’ll do as you say,” and he crawled on Louie’s horse.

Schack, Kunnecke, and I stayed at Hayes that night. Earlier I had sent some men back on the trail K had left, to find the corpse. They had no trouble finding it. It was on the east fork of Plum Creek where it entered the Cheyenne River. It was in a washout about 50 feet deep. The body had been chopped in two to facilitate moving. Danler had weighed only about 150 pounds but his body had been frozen in the first grave and was difficult for one person to handle. The men brought the body to Hayes about midnight. I sat up all night watching the prisoner although I had him handcuffed to the bed. The next morning, after caring for the team that States Attorney M.G. Simon had brought out, we started for Fort Pierre, using K’s team and wagon to haul the corpse. Simon wouldn’t ride with K, so Louie Olson, Simon, and the corpse came in together. Henry Schack brought K in with him, while I rode alongside on horseback.

We were crowded for time, as the sun was setting and there was no way to cross the Missouri except on

the ice. There was no jail in Fort Pierre in those days so we had to keep our prisoners in Pierre. When we reached the river, we saw about 20 feet of open water between the sand bar and the main ice. It looked safe, however, so I plunged off into it, knee deep. I told the others to follow. They hesitated saying it was too cold, but they came on anyway. We finally arrived in Pierre, but Schack, K, and I were all afoot because the ice wouldn't hold up much. In fact, it was almost gone out.

We left the horses and wagons on the Fort Pierre side. As we walked past Hilger's store, I told Schack and K to wait there. I'd be right out. I went in to get three pairs of socks. I didn't even wait to pay for them, but when I came out, Schack and K were nowhere to be seen. Hilger wanted to know who I had in tow, a horse thief? "No," I said, "a murderer." Hilger dropped my socks and I grabbed them and went on. K had told me he wanted to see a couple of good attorneys so I guessed he was in the office of Horner and Stewart. Sure enough, he was talking to Mr. Horner. I was surely glad to see him, for I thought he'd left the country. Schack was not with him. I didn't know for sure where he was but thought he was in the next room. I immediately got K, with some difficulty, out of Horner's office, telling Horner he'd have to see him in jail. It was almost dark so I hurried K to jail so I could return across the Missouri before dark, for the ice was very treacherous.

All the while K was in jail, he was devising ways of escape but he was unsuccessful, although he nearly escaped once. One day this prisoner ate a bar of soap and got pretty sick. Then he refused to eat for a week, although he drank water. I'd made many a trip over at the call of Logan, the jailer. Finally I asked K, "Are you sick?", because he wasn't eating. "I'm not sick. You know a man charged as I am doesn't get hungry." I told him that he wasn't going to die on our hands. We'd force him to eat. I'd brought Dr. Lavery over with me and sent the doctor down to K's cell and he came back laughing. Nothing was wrong. K tried to saw window bars, he had one sawed through, and another half way, but was caught in the act.

Kunnecke, through his lawyers, was able to postpone the trial for nearly two years. However, prior to the trial, he pleaded guilty. Then he was sentenced to life imprisonment in the State Penitentiary. He escaped from there after about fifteen years and, as far as I know, he's still running. This is the story as far as I remember. I hope that from this you can write your story. I am sorry I could not do this sooner, but too many things interfered—illness, stiff fingers, no secretary, etc.

Your friend,
Andy Feeney.

Another account was given by Leonard Ellis in the Rapid City *Daily Journal* on 25 September 1955. A more recent account by Nick Lowrey appeared in the Dakota Life section of the Pierre *Capital Journal* on 3 June 2016. William Kunnecke was a small man. He and his wife came from Germany in the 1890s and settled in Idaho, where he became a sheep rancher. Soon thereafter, his herd became suspiciously large and some neighboring sheepherders turned up missing or dead. His hired hands also got death instead of wages. He moved to Stanley County in 1901, bought a ranch northeast of Midland, a road station on the Fort Pierre to Deadwood Trail, and hired a sheepherder named Andrew Denler in 1903, who was soon missing. Kunnecke came to Fort Pierre occasionally, where he met and hired Charles Rohrbecker. Then Charles was also missing. His brother William, a teen-aged farm boy from Iowa, came looking for Charlie in March and arrived at Kunnecke's sheep ranch. Kunnecke hired him. He knew Charlie had also worked for Kunnecke and had disappeared. Kunnecke told Will Rohrbecker Denler had left, but Denler's dog was at the ranch. Rohrbecker knew Denler took his dog everywhere. Inside the cook-and-bunk shack Denler used, Rohrbecker saw bloodstains and Denler's sheepskin coat. When he asked Kunnecke about the blood and why Denler would leave without his coat and dog, Kunnecke said the blood was from a sick ewe he had shot, he should take the coat, get to work, and stop asking questions. Kunnecke's voice carried a threat that scared Rohrbecker. He went out to begin rounding up sheep but he feared Kunnecke was following him. He hid in a washout until nightfall, and then began a fifty-mile running trot over the snowy prairie back to Fort Pierre and boarded the C&NW eastbound train. Without telling anyone, he returned to Iowa, where his parents urged him to report his fears to the Sheriff of Stanley County. He did, and that's when Andy Feeney took over, deputizing Frank Hopkins, Henry Shack, Martin Galligar, John Kahill, Louie Olson, and a local rancher named Weeks in Hayes, another

road station on the Fort Pierre-to-Deadwood Trail. Kunnecke used his axe to chop Denler's body in half. It made moving the corpse easier, Kunnecke said.

John F. Hughes acquired Ellen's ranch holdings when he married her in l886. Her quarter section was on the east bank of Willow Creek and his section was on the west bank, where Willow Creek enters Bad River. The combined holdings became the nucleus of the Hughes horse and cattle ranch that extended over 20,000 acres of open range. The summer range extended up Gray Blanket Creek and Porcupine Creek as far as the Lower Brule Indian Reservation to the south, and a similar distance up Willow Creek to the north. The animals wintered in the Bad River bottom, where the ranch buildings and corrals were located. Paw told me that, as boys, he, his brothers, and the Feeney boys hand-chopped all the sagebrush out of their mother's quarter section to improve it for winter grazing (it's still sagebrush-free in 2015). The Hughes-Feeney holdings where Willow Creek enters Bad River was special in another way. According to Ellen, it's where Sitting Bull was born.

Mike Feeney became a rancher on the Cheyenne River in northern Stanley County, now northeast Haakon County. His ranch became one of the largest and finest in the northwest. He was a two-term State Senator when he died in 1937. Uncle Mike had a humble beginning. One of his first jobs, after the Feeneys entered Dakota Territory and settled north of Pierre, was with the Hayes and Jackson Cattle Company. Jackson hired Mike to be a cowboy looking after a herd of cattle in the draws and on the flats just south of the Cheyenne River. Mike filled a wagon with supplies, including canned vegetables, and headed into this forlorn region. He dug a cave in the side of a draw called Deep Creek and hung a gunny sack over the entrance. This was his Home On The Range. Some time later, Jackson rode out to see how things were going. He found the wagon and cave, went inside the cave, and found the stash of canned corn, beans, etc. Mike was out with the herd and when he returned, Jackson said to him, "You Irish are all alike. You starve in Ireland and then come over here and live like kings!"

This story was told to me by Mike's oldest son, Pat, when he accompanied me, my wife, Bev, and son, Mac, to show us Uncle Mike's ranch house in Feeney Draw in August of 2001. Pat had just turned 85. I had seen the ranch house once years earlier, and tried to relocate it the year before when brother Leo and I attended the year 2000 reunion of graduates from Fort Pierre (later Stanley County) High School, but I was unsuccessful. That year Pat had taken us to Uncle Andy's ranch, where the house, barn, and corrals, all made of big logs from cottonwood trees, were still standing. Uncle Mike's house was made of cedar logs and it was also still standing. We drove down Feeney Draw, winding through bushes heavy with wild plums and chokecherries, and there it was, a long, low house with a porch supported by posts along nearly its entire length. Huge cottonwood trees surrounded the house, and a large branch from one tree, perhaps struck by lightning, had fallen alongside the gravel road in front of the house. A creek bubbling with clear spring water passed under the road. Pat told us that someone once said to his father, "I know you were the second man to ranch out here because you have the second-best spring!"

As Mike prospered, he hired a man named David (last name) who had married, Esther (Essie) Skates. Mike told Pat, "She was the most beautiful woman I had ever seen." I saw Aunt Essie often enough when I was growing up, after the Feeneys moved to Pierre. Pat lived just above the house where Josie (my father's sister) and Frank Kelley lived. Aunt Essie was indeed an unusually handsome (and kind) woman. Mike paid David $10,000 to divorce her so he could marry her. That is about $500,000 as I type this (in 2013), based on the price of gold. It was $32 an ounce then and is close to $1500 an ounce now. She bore David three sons, one of whom died as a baby, and then divorced him. She married Mike Feeney when she was in her 20s and he was in his 40s, despite objections from her anti-Catholic parents in Illinois. Mike raised the two David boys, William and Kenny. Essie bore Mike six sons, Pat, Mike, Andy, John, Lindy, and Jimmy. Lindy was named after Charles Lindbergh, who had flown across the Atlantic Ocean to Paris. They were mostly grown when I was a boy, but I saw them off and on. I also saw the youngest surviving David boy, whom Mike raised. When my father was working his way through law school, he taught in a one-room schoolhouse on Carlin Flat above Feeney Draw. Some of the Feeney boys attended, and he stayed at Mike Feeney's ranch. On our trip in 2001, Pat showed us the site of the schoolhouse. The concrete foundation slabs were still there. Pat was Uncle Mike's eldest son, and Mike taught him the ranching business from horseback, thereby instilling a desire to continue the Feeney ranching tradition.

Pat told me his mother, pregnant carrying Pat, was in a buggy coming to town when the horses got spooked and took off. The buggy turned over and she broke her ankle. Mike got her to the Missouri where a barge took them across to the hospital in Pierre. Pat was born as the doctor was setting her ankle. A few days later they returned to the Feeney ranch in a Model T Ford that hit a ditch in the road and Pat was thrown through a barbed wire fence alongside the road. His mother, Essie, panicked because it was dark and they couldn't see Pat. Mike said, "If you shut up, I think I hear him crying." And so he was, cut up a bit but unhurt.

Pat was about twelve when he lived in a shack beside a corral where he had four horses he rotated as he tended cattle on the range. One day two cowboys from the Diamond A Ranch rode up. Pat offered them beans and coffee for lunch, so they dismounted and went inside his shack. One asked, "Are there any rattlesnakes around here?" Pat said, "I live with them," and stomped the wooden floor with his foot. Immediately rattlesnakes under the boards began buzzing their tails. The two cowboys dashed out the door and galloped off. Pat told me he killed four or five rattlesnakes every day that summer, but none under the shack. "They had acted like tough hombres," Pat said, "until the rattlesnakes started buzzing."

Pat was a good athlete. He had gone to a Catholic school before he went to Pierre High School. Frank Kelley was the baseball coach, and he asked Pat to take a turn at bat. Pat hit the first pitch over the fence. Pat and Frank were close friends thereafter. Pat told me, "I was a good runner, and Frank and I had lots of races over the years. He always won, though he must have been twenty years older." Frank married my aunt Josie. We visited them often in Pierre.

When I was a boy, Pat had one of the biggest ranches in the northern plains. At the turn of the millennium, he still raised Angus bulls in Stanley County, and leased them for breeding purposes all over the state. His herd in 2000 was 350 bulls, down from 1500, and Pat was in his eighth decade. At the Fort Pierre High School reunion that year, I gave Pat a map of Stanley County and asked him to locate all the land he owned or leased. When he finished, I had written the name "Feeney" over half the county. He still maintained his office in the Saint Charles Hotel, a stately brick edifice near the State House in Pierre. It has always been the meeting place where big shots wheeled-and-dealed when the legislature was in session.

The 25 August 2008 edition of the Capital Journal in Pierre carried a story by Jeff Bunn on Pat Feeney. Here it is.

Local Man a Pioneer in Livestock Industry

PIERRE—The blinds in Pat Feeney's top floor apartment are drawn to keep out the mid-day August sun. Still, lights are not needed. A window air-conditioning unit drones, and as he sits down to a small table he motions to an immense tableau dominating the wall of his living room. "That's everything you need to know about me," the 92 year-old says of the scene of two bulls butting heads on the prairie with a cowboy on horseback readying his whip behind them.

A bull man, more precisely *the* bull man, Feeney pioneered the leasing of bulls, owning some 75,000 throughout the 70 years he was in the bull business, making him the largest single owner of bulls, he said. "And they were all good registered bulls," he added.

His forays into new businesses read like a shotgun blast, and the impact his dexterity has had on the community becomes as clear as the view of the Capitol dome and Missouri River from his apartment. It is oil mining and uranium mining in Wyoming; horse track ownership in New Orleans; running a dog racing track; ranching on La Framboise Island before selling it to the federal government. In the mix are owning and managing restaurants and bars, including the original Longbranch. And he was a founder of the Fort Pierre Livestock Auction.

Dismissing the endeavors as "just something to do," the Haakon County native will say he always figured "the more you use it, the better off you are," as if speaking about a part of the brain linked to ingenuity or basic entrepreneurship. Johnny Smith, with the Fort Pierre Livestock Auction, said Feeney not only owned more rental bulls than anyone else but his bull rentals improved blood lines. "I think he had as much to do with improving the cattle industry here in South Dakota by buying good bulls and renting

them, as anybody," he said.

Born to a land man in Haakon County, Feeney, the oldest of five (actually six) children, began running the family ranch at 19 after his father died. But he quickly realized that land owning was not to his liking. "He always had his money tied up, and I wasn't much interested in tying my money up," he said. He eventually built enough purchasing power to buy hundreds of bulls at livestock auctions, which was the reason he was successful in renting bulls. "It's a nuisance if you can't buy them all at once," he said. "I would buy them all, from the top-end bulls to the bottom-end bulls," he said. Leasing them would be the easy part.

Storing the massive animals when not being used would be the challenge. "Bulls aren't the easiest things to keep," said Smith. "They get so rambunctious. They'll tear up equipment, or when it gets near spring and they get mating season calls, they get hard to handle. Ain't everybody can do it." As some cattle breeds became more popular, Feeney made sure he had the bulls to meet the needs of cattle producers. "He had the kind of bulls that would appeal to every kind of cattleman", Smith said.

His success and reputation for entrepreneurship caught the attention of promoters who would contact him about buying a bowling alley or mining. A drawback to the bull business was it took him away from his wife, Yvonne, now deceased, and his children. "She wasn't crazy about it," he said of his late wife. "I was gone a lot of the time."

Now living in an apartment building he once delivered bootleg liquor to during the days of prohibition, Feeney speaks of his desire to get back to the golf course. A recent foot problem has kept him away from the sport and the desire seems in line with the old blood and his belief that "the more you use it, the better off you are." Whatever it was that Feeney used and however long it was that he first used it, it apparently has not been lost.

Pat sold his last registered bull after he turned 90. About a year later, he went to Sioux Falls to open a constricted artery going to his left foot. After the operation, he spent most of July in St. Mary's Hospital in Pierre. I visited him every week and picked up some good stories that I've copied here. His brother Lindy and daughter Patty visited him early in August and got him back into his apartment in Saint Charles Hotel. Pat and I planned to drive to Harrold, a town on the route of the Chicago and Northwestern Railroad built on a pre-emption site owned by Pat's great uncle, Mike Feeney, who supervised the Irish construction gang bringing the railroad into Pierre in 1880. Pat was diabetic and his left foot was amputated in the fall of 2008. I visited him every week when our son Mac and I spent Christmas with Bev for two weeks in Fort Pierre. Pat was in St. Mary's Hospital. He had been fitted with an artificial foot. He walked to the exercise room every day using a walker to keep his balance. Pat was in high spirits and looking forward to our trip to Harrold. Mac and I drove back to Maine in January. Six weeks later I got an e-mail from Bev telling me Pat Feeney had died on 13 February 2009 at 92. Two days later I turned 71.

My father stayed at the Feeney House when, as a young man, he taught Pat Feeney and his brothers in the Carlin County country school in northeast Haakon County. I have his Teacher's Contract, dated 30 August 1921. Paw also taught school at Mission Ridge above the Cheyenne River in northern Stanley County. Casey Tibbs grew up on a ranch near Mission Ridge, but he claimed Fort Pierre as his home town. Casey went on to become a world-champion rodeo cowboy; six times the saddlebronc champ, twice the all-around champ, and once the bareback champ from 1946 to 1958. He brought top-ranked rodeo cowboys to Fort Pierre to compete in the Casey Tibbs 4-H Rodeo each summer. Fort Pierre already had a Fourth of July Rodeo, celebrated every year since 1820, the oldest in the United States, I was told. The summer when I was fifteen, I worked in a dry-cleaning shop in Fort Pierre, at 35 cents an hour, and Casey Tibbs brought in his rodeo duds for me to clean. One year he was on the cover of *Life* magazine.

Casey Tibbs became a rodeo cowboy when he was still a teenager. Ranchers knew Casey had a special talent for breaking horses, even as a boy. Pat Feeney told me he hired Casey to break a half-thoroughbred stallion that had never been ridden and Pat had just purchased. Casey and Pat got the stallion saddled in the corral on Pat's ranch. "Casey was about fourteen," Pat said. "He mounted up and

the horse bucked around the corral a few times. Then we rode out to the north pasture to round up calves that had been born that spring, taking different directions to cover more ground. Casey came back with a newborn calf across his saddle. I asked, 'How did you get the stallion to accept that calf?' Casey said, 'I talked to him. We reached an understanding.' Casey knew horses."

My father, Leo James Hughes, was born in 1899. He married late, at age 36. My brothers and I called him "Paw." As a boy, he and Felan were on cattle trains that shipped Hughes cattle to Huron, Sioux Falls, and Sioux City. When he was 16 or 17, they took a trainload of Hughes cattle to Chicago and saw the World's Fair that celebrated the United States Centennial. His brothers, Francis and Kiran, were already fighting in France when he graduated from Fort Pierre High School in 1918 and joined the army. He was embarking on a troop ship to France when World War I ended. He was honorably discharged from the army, and attended St. Thomas College in Minnesota and the University of South Dakota. Paw passed the bar examination in his junior year and was admitted to the bar with his brother Kie in 1921, without graduating from college. Back then, passing the bar examination was enough, but Paw repeatedly stressed the importance of an education to his three sons, saying to us, "It's the only thing that can't be taken away from you."

My Father's Odyssey

Paw opened a law office in the Stockgrower's Bank Building in Fort Pierre, but he was lured west after several months with no clients. He heard that the Longview Lumber Company in Maine was hiring lumberjacks to work out of a logging town that it built in Washington. In 1922 he began a seven-year odyssey through nineteen states and into Mexico and Canada. From Fort Pierre, he went to Montana, where he worked in a sawmill near Billings, to Oregon where he picked cherries near Mount Hood, sacked wheat for shipment to Bend, and helped take in the harvest on Billy Sunday's truck farm near Dallas. Billy Sunday was a famous radio evangelist. Paw remembered the sermon when Sunday said, "Will all women in the radio audience please cross your legs. Now the Gates of Hell are closed!"

My father's journey from Fort Pierre to the West Coast was on freight trains for the most part, riding the rails as a hobo, by his own admission. He told us that his most harrowing experience took place when he and two other men were in a boxcar on a train crossing the Rocky Mountains. One man flashed a ten-dollar bill. The other man snatched it away and threw the first man out the open boxcar door as the train was crossing a gorge. Paw had over one hundred dollars hidden in his shoe at the time. Paw never reported the incident.

After harvest time in Oregon, Paw took a train to California from Eugene, had two teeth pulled in Redding, worked in a steel factory in Oakland, went to Los Angeles several times, where he saw the Rose Bowl football game between Notre Dame and Stanford for the national championship and worked as a Hollywood stagehand and extra in movies starring Douglas Fairbanks, Mary Pickford, and Rudolph Valentino. Next, he worked for Southern California Edison Company for two or three years as a brakeman on a work train that hauled rock from an eight-mile-long tunnel dug to bring water from Boulder Dam to a power station in Big Creek. The water was also used for irrigation in the valley. Then he took a bus across northern Mexico (perhaps New Mexico, as there were no major roads across northern Mexico) to El Paso, Texas, where he became a roustabout for the 101 Ranch Circus. The circus train of 35 to 40 cars traveled to Indiana on tour, with stops at St. Louis and other cities. At each stop the circus conducted a parade in which Paw drove a wagon full of Indian squaws pulled by six horses. He left the circus in Indiana and took a passenger train to Detroit, where he worked in a Ford car factory. Then he took a boat across Lake Erie and crossed the Canadian border at Niagara Falls. He went on to New York City, saw the Statue of Liberty, and was planning to go to Maine when he got a general-delivery letter from his father. Felan had married and was starting his own ranch near Lacy (a little town now "gone with the wind"), and John F. Hughes wanted Leo to return and run the Hughes ranch on Bad River. He immediately took a freight train to South Dakota, by way of Chicago and Saint Paul. The year was l929. The stock market crashed and the Great Depression began shortly after he returned.

After I accepted a position at the University of Maine in 1974, my wife Bev and I picked up Paw at Maryhouse, a Catholic nursing home in Pierre, and we brought him with us. We arrived in Maine in January of l975, with a blizzard chasing us all the way. It took him 46 years, but he finally made his trip

to Maine. Paw died in Bangor on 25 April 1986, at the age of 87. Paw wrote the account of his travels when he lived with us in Maine. He lived to see our first son, Shane Felan Hughes. “Shane” is Gaelic for “John”, the name of my grandfather, John F. Hughes. Felan Hughes was Paw’s brother and my Godfather. “Felan” means “wolf” in Gaelic.

When Paw returned to Fort Pierre in 1929, he met Mary Susan Schiltz. After attending Saint Teresa College in Winona, Minnesota, and Northern State Teachers College in Aberdeen, South Dakota, she came to Fort Pierre in 1925 to teach school. She was the eldest child of Jacob and Clara Schiltz who lived in Alexandria and Emery, farming towns in eastern South Dakota. Their ten children, from oldest to youngest, were Mary, Carl, Bertha, Agnes, Lucille, Lawrence, Wilfred, James, Marguerite, and Dorothy. Except for Lawrence, the boys had blue eyes like their father and the girls had brown eyes like their mother. Carl and Wilfred were tow-headed blondes as boys, and Mary, Bert, and Lucille were brunettes. The rest had light brown hair.

On both sides, the family name was Schiltz with roots in the old Grand Duchy of Luxembourg, which was later divided, part becoming the modern state of Luxemberg and part becoming a province in Belgium in 1839. What is known of the Schiltz genealogy on the Clara Schiltz side began in 1967 when my Godmother, Lucille, sent a copy of a letter to her sister, Bertha, with the suggestion that Bert (as everyone called Bertha) ask their uncle Will, their mother’s brother, for more information. The letter was from Bessie Emory to their mother’s cousin, Mathias Schiltz. Bert also contacted her cousin, Father Keith Schiltz, who was in Sierra Madre. He became interested in the Schiltz genealogy and had a nun in Chicago draw a family tree that took both branches of the Schiltz family back to Luxembourg. From relatives in Luxembourg, Father Keith obtained letters written by Karl Schiltz, my great grandfather, during the Civil War, which he had translated from German into English. Another relative, Jerry Ruden, got interested after he met Bert when he was visiting his mother, Veronica, in Huntington Beach. Jerry has been busily fleshing out the family tree ever since, even visiting Luxembourg for that purpose. None of this would have happened if Bert hadn’t moved to California in 1943 and pursued the project through her contacts with California relatives.

My maternal grandfather, Jacob Schiltz, his brothers Nick and Barney, and his sisters Susie (Schroeder), Angie (Kayser), and Annie (Hillard), were orphans of Christian and Suzanne Schiltz. Suzanne was a daughter of Jean Michel and Barbara (Pohl) Bouquet. They all emigrated from Luxembourg and settled in Minnesota. Jacob was born in Caledonia, Minnesota, in 1869.

As with the Hughes and Feeney families, I don’t know how the Schiltz family got to Alexandria, South Dakota, where Jacob Schiltz raised his family. The most direct way would have been from Luxemburg to one of the Dutch seaports, and then to New York City on a ship. Railroads in operation in 1860 would have taken them up the Hudson and Mohawk Valleys to Buffalo, on to Chicago, and across Wisconsin to Caledonia in the southeast corner of Minnesota, where Jake was born. A Mississippi river boat could have taken him to Dubuque, Iowa. He probably traveled by train when he moved to Alexandria in 1894. Tracks had been laid after 1860.

Jake’s father died at age 49 when Jake was 6. Jake’s mother then married their hired farmhand, John Ensch, who, the family soon discovered, was mean and cruel. When Jake was 11 and his mother was pregnant and dying, she gathered her children around her deathbed and asked them to forgive her for saddling them with such a stepfather. When she died, Ensch rejected her children, who were then raised by various relatives. Frank and Giddle Bouquet took Jake. Even though he had only a fourth-grade education in a school run by Catholic nuns, Jake spent six months at Capital City Commercial College, a business college in Dubuque, Iowa, before moving to Alexandria, South Dakota, in 1894. There he married Clara Schiltz in 1901 and worked for a dealer in farm implements until 1902, when he became County Treasurer. In 1906 he began a term in the South Dakota Senate. Then he worked in a bank in Emery for eight months and became a successful banker in Alexandria, eventually owning several farms, until he lost everything in the Great Depression. Jake sold the farms so he could cover withdrawals from his bank during the panic in 1929, and he never recovered. There was no Federal Deposit Insurance Corporation to protect depositors at that time. Jake Schiltz was a true Christian gentleman; kind,

considerate, honest, and loved by all who knew him. I remember the twinkle in his eye.

My maternal grandmother, Clara Schiltz, was one of twelve children born to Karl Schiltz and Mary Anne Kraack. In an old family photograph, Karl is slender and has sad eyes whereas Mary Anne is plump and has a broad face. Karl Schiltz is remembered with the kind of awe in the Schiltz family that John F. Hughes inspired in the Hughes family. Karl had emigrated from Luxembourg before the Civil War, but he maintained contact with his Luxembourg family by letters. Here is the opening part of a letter he wrote on 10 June 1861 from Rockdale, Iowa, to his parents in Luxembourg. The war had just begun. He saw it through to the bitter end. The letter was in German, but the English translation is elegant.

My Great Grandfather Reports on the Civil War

Dear Parents:

"Give us, O Lord, peace in our time." (written in Latin)

"Look, O God of peace, look down and speedily decree the end of brotherly strife. Close the open grave of war and bring to an end this mad conflict. This great America has gone through its peaceful times, and now prepares for a war that will not end quickly.

You perhaps have heard how it goes here. It is total war, and brothers are slaying one another. You perhaps know this country claims to be a free country, but not for all because there are slaves here in the South. The North won't have it this way and it wants them free, but the South will not give in. They have two parties to elect a president, the Republicans in the North and the Democrats in the South. The United States has 300,000 infantry and the others have about l95,000 men. Both sides have lost many men and there won't be any peace until all is destroyed. In the South there is a law that says anyone declaring he wishes to go to the United States will be hanged. In the North every effort is used in the battle against the South, and in the South are the slaves who have run away from their masters, but it will be rough in America when they are free. A white man can no longer make a living because they work for half price in the South. No white man works there because it is too hot, and about all that grows there is cotton. They have always depended on the North for foodstuffs but all that is over now. They must either die of hunger or surrender."

Karl entered the Civil War in 1862 as a volunteer in Company A of the Iowa National Guard, which was one of nine Companies in the Twenty-First Regiment of the U.S. Fifth Army. Company A was trained and outfitted in Iowa, and then sent to various training camps in Missouri, where dysentery took its toll on the troops. The first hard battle was in Woods Fork, Missouri, on 17 January 1863, a two-day mismatch that pitted 250 against 4000 Confederates. After recuperating at Iron Mountain, they boarded a boat at St. Genevieve that took them down the Mississippi to join the siege of Vicksburg. Company A had only 200 survivors after Vicksburg, most perishing from disease. Karl was wounded in action. Karl's Company, now part of General Sherman's command, was sent to Louisiana and Texas under Major Crooke, where Karl engaged in guard, patrol, and garrison duty. He was issued a new Springfield rifle, reassigned to the U.S. Nineteenth Army, and sent back to Louisiana on 26 July 1863, where he recovered from sickness in Morganza Bend. Then he was sent on a riverboat to occupy a "Rebel Fort" at St. Charles, Arkansas, on 21 October 1864. By year's end, he was in Memphis, Tennessee, where he was assigned to the cavalry under General Grierson. On 5 February 1865, he was sent to Alabama where he joined the U.S. Sixteenth Army in the Battle of Mobile. He was mustered out of the Army in Baton Rouge on 23 June 1865. Karl arrived in Clinton, Iowa, on 25 July 1865 and wrote, "ALL IS OVER!!! THANK GOD!!!!"

Karl Schiltz never slept in a bed during that whole time. Hunger was often his companion. In a letter to family, he described how he stole ("liberated" he wrote) a small pig and hid it in his jacket until it could be roasted and shared with his fellow soldiers. A letter written to "Parents, Sisters and Brothers, and Friends" in Luxembourg from Kimerville, Louisiana, on 2 February 1865 reveals the horror of war. Referring to his sick leave, he wrote, "I can give you some good news, thank God, for I have not had one sick hour since I came away from my brothers, and added to that I can inform you that we have not been lying idle but since that time we have covered over 1500 miles and have suffered many rough days, but

these have gone by just as swiftly as if they had been pleasant. We have done very well against the enemy cavalry—cut it down and slew it day and night and in cold winter weather." Referring to the stifling summer heat in Arkansas and Tennessee, he wrote, "And night time is no fun because the mosquitoes are so terrible you could not get along without a net over your face—otherwise in the morning you wouldn't be able to open your eyes." In those last months of the war, he observed, "I hope God will close the grave of war before more horrors happen. The North has stretched out to the South the hand of peace and I hope God will close the ring of peace…and when peace is made and the arsenals closed, the survivors can march back in triumph to those loved ones so long desired and with the war decoration of the palm of victory on their arms." He described his grounds for optimism: "Yesterday I was in the City of New Orleans where so many southern prisoners have been brought, and they really saddened me. They were very young boys and very old men, they could hardly walk, and seemed half-starved, ragged as beggars. They showed us no mercy when they take us prisoner, and by that fact must they suffer more."

Karl closed his letter by expressing his desire to return to Luxembourg: "I will come out of the war, cross the ocean and direct my steps to that peaceful place, Oberdonven. And then indeed will I enjoy those happy hours so long desired by me." Things had not gone well in Luxembourg during the war years. He wrote, "I have received the sad news from you that my Uncle and Aunt Demuth have lost their dear children. They were so good to me. And now they have gone from us to their heavenly home and leave us with sorrow and disquiet for this world. There they live in peace, no cares and joys without number."

In another letter to his family in Luxembourg, sent from Rockdale on 2 October 1866, Karl Schiltz mourned all of his boyhood friends who had died from "war, pestilence, and hunger that have befallen Germany." Then he wrote, "There were so many deaths, but don't let that discourage you. Good times will come again. Even though our friends are no longer here with us after God has called them home, we can hope to see them in the next world." He added, "The money I sent through the States Bank in Dubuque is for you and for your trouble. Whatever is left, Mother can have if the others are willing. She can use it as long as she lives. I can make my living without any of it. I am only happy that she gets something. I just hope that everything goes well. Don't forget God. He will provide. Things will be better than you expect." Karl closes his letter by writing, "I want to tell you that soon I plan to marry, that I have waited long enough. I think I have a good girl. Her parents are from Rilen, Luxembourg. I don't think you would have anything against her."

Karl Schiltz married Mary Anne Kraack shortly thereafter in 1866. From Key West, Iowa, he entered what he called "the wilderness" of Dakota Territory in 1879. He put up a small shanty and planted five acres in Hanson County, which was named after a major in the Civil War. That was all a Civil War veteran had to do in order to stake a claim. Eastern Dakota Territory had become safe for settlers when Fort DeRoche, later Fort Dakota and later still Fort James, was built on the James River in 1864, after Indians had destroyed Sioux Falls in the aftermath of an uprising in Minnesota in 1862. The fort was abandoned in 1867 when the Indian scare abated. A road that was begun at Yankton in 1872 became a highway for the Black Hills gold rush and reached Fort Pierre in 1876. Alexandria had a post office in 1877, two years before Karl Schiltz arrived. He returned with his wife and seven children in February of 1880, when Mary Anne was pregnant with Paul Schiltz, the grandfather of Jerry Ruden. Paul was the first white male born in Hanson County. Four more Schiltz children were born in Hanson County. Karl's children addressed him as "Father" out of love and respect. As of 1970, he and Mary Anne had 770 descendants. Their children, Paul, John, Peter, Rose, and William Schiltz, Clara (Schiltz), Maggie (Arend), Anna (Jarding), Mary (Jarding), Lena (Steichen), Virgie (Fitzgerald), and Cecelia (McIntyre), mostly married into German and Irish families that were Roman Catholics, but the Luxembourg identity remains in the Schiltz family. When Karl and Mary Anne celebrated their golden wedding anniversary in 19l6, over 500 people came—relatives, friends, early settlers, and Civil War veterans.

Jacob and Clara raised their ten children on five acres in Hanson County, with an alfalfa patch, a pasture for a horse and cow, a chicken coop, a windmill, a cistern and well, a large vegetable garden, apple and plum trees, currant bushes, and a surrey with a fringe on top. Jacob became a successful banker in Alexandria, the county seat. I have a recollection, perhaps from my mother (Mary, the eldest), that his

bank acquired titles to several farms over time and Jacob had planned to give them to the children who wanted to be farmers. At that time private banks could issue paper currency. When the run on banks took place after the stock market crash in 1929, he sold all the farms so he could pay 100 cents on the dollar to every depositor in his bank. Most banks returned only ten cents to the dollar. As I write this, none of my mother's four living sisters has this recollection, but I did not make it up. Jacob's integrity ruined him financially. Several of his children had some higher education; three years for Mary, two years for Carl at Columbus College in Sioux Falls, one year for Bert at DWU in Mitchell, and seminary for Wilfred. Mary, along with her parents and sisters Agnes and Lucille, put Wilfred through the seminary. He was a priest for life, over 50 years. For many years his parish was in Emery, not far from Alexandria. Wilfred stayed close to his roots.

When she was teaching school in Fort Pierre, Mary was a boarder in the home of Webb Lambert, who was thought to be in the Ku Klux Klan. When the Democratic Party nominated Al Smith, an Irish Catholic, for President in 1928, the Klan burned a cross on Black Top, a high shale hill on the Hughes ranch that had a commanding view of Fort Pierre, Pierre, the Bad River Valley, and the Missouri River Gorge. One day, Webb Lambert's wife said to Mary, "I've known you long enough so I trust you to give me an honest answer to a question that has bothered me for a long time. Is it true that the Catholics are digging a tunnel under the Atlantic Ocean so they can bring the Pope over here to rule?" Mary denied it, of course, but I always thought a better response would have been to say nothing and, looking Mrs. Lambert straight in the eye the whole time, take out a black book, write her name in it, strike a line through the name, put the black book back in her pocket, and walk away. Paw bought Black Top, so as a lawyer and judge he could deal with the Klan if it tried its cross-burning stunt again.

Leo courted Mary for six years but, by the time he turned 36 and she was 32, she decided he would never marry. She went to Mitchell, where her parents lived at the time, but Leo pursued her and proposed. They were married in Holy Family Catholic Church in Mitchell on 3 July 1935. They only had sons. Leo James, Jr., was born in 1936, Terence Joseph (yours truly) was born in 1938, and John Timothy was born in 1946, the year when John F. Hughes died. When Leo was a baby, his parents were trying to get him to say "Daddy" but the little cuss refused. Finally his mother said, "Say Papa," and Leo said, "Paw…Paw." Our parents were "Maw" and "Paw" from then on.

Maw took my picture on my third birthday. It captures a rapscallion with fanatic eyes (John F. Hughes' fierce blue eyes), a mischievous grin, disheveled clothes, clenching fists, sturdy body, legs planted in cowboy boots, and charm that let me get away with it. The essential T. Hughes was in place at age three.

Leo and I spent our pre-school years in the Little House. It was on the floodplain of Bad River. I remember times when the floodwater came right to the edge of our house. Paw would take us to the top of Hughes Hill, where the Big House was located, and show us the flooded Bad River Valley. It looked like a giant lake extending to the horizon and a mile or more wide from bluffs to bluffs on the valley sides. The course of Bad River could still be seen as a parallel line of trees that snaked back and forth from one side of the valley to the other side. One summer, Paw caught some grasshoppers and, hitching strings to them, handed the "reins" to me to "drive" the grasshoppers. Maw took pictures of these scenes with her Kodak box camera, so we have these memories. Each December, Paw would take us out to the cedar hills on the Fort Pierre side of the Hughes ranch, where he pruned cedar (juniper, actually) branches that he took back and tied together to make a Christmas tree. Then he put one green light bulb in the middle of it, and we decorated it with Maw. The cedar berries were natural decorations and the pleasant cedar (juniper) smell lasted for weeks. Even now, the Little House seems like home to me, although I mostly grew up in the Big House. The Big House is John F. Hughes' house. Bill Fischer bought and torched the Little House early in the twenty-first century.

John F. Hughes had divested himself of the Bad River ranch during the Great Depression, because he couldn't afford the taxes on it. Paw bought the original 480-acre homestead between Black Top and Camel's Back at a tax sale and added Black Top to it. When Grandpa Hughes moved back to his Pierre house after Grandma Hughes died in l942, we moved up to the Big House. There was a barn and chicken coop behind the house, and a stock barn for milk cows, some cattle, and horses, with corrals and stalls, on the west side of Hughes Hill overlooking Bad River. Across Bad River, in the big oxbow bend between

Black Top and Camel's Back, were more corrals and sheds, and a little house for a ranch hand. The railroad tracks up Bad River Valley to the Black Hills ran through the bend. Paw ran cattle on the Camel's Back side of the tracks, and grew wheat grass or alfalfa on the Black Top side. Paw planted corn and potatoes on about two acres of land along the Fort Pierre town line on the east and west sides of the Big House. Our only close neighbors over the town line were the Sweeneys, at the foot of Hughes Hill just across the street from the Little House. Their house faced Wandel Avenue, which was lined with houses except for a big grassy lot that John F. Hughes and then Paw owned. A sidewalk crossed the empty lot from Wandel Avenue to the formal entrance to the Big House, a distance of some fifty yards, so the Big House seemed to stand alone on Hughes Hill, facing Fort Pierre. It was an impressive sight.

The top of Hughes Hill was between the Big House and Bad River. Maw took a picture of Paw up there with us there to see the big "sea" Bad River Valley had become during spring floods. When we were older, Leo and I built a "fort" at the top with dirt walls and a mounted "machine gun" I made from the "barrel" of an old gas heating stove. Northerly winter winds piled deep snowdrifts on the brow of Hughes Hill between its summit and US Highway 83. We tunneled into the drifts and carved out rooms and passageways. Our horses were kept in a barn on the west side of Hughes Hill. Their pasture was the hill and the floodplain north of Bad River. One summer day, when I was about seven years old, I was on one of the horse and cattle paths on the steep south side of Hughes Hill and walked right past a coiled rattlesnake. Nothing happened. My guardian angel protected me just as one protected the two children in the big picture in the Big House. As teenagers, Leo and I built a "backstop" for baseball games on the most level ground of Hughes Hill west of US 83. We had many games with kids from the south side of Fort Pierre. Some years later, Paw had Hughes Hill leveled to the height of the Big House, with the idea of selling housing lots on it. The Big House, Hughes Hill, and the Hughes homestead clear to Bad River were annexed by Fort Pierre a few years later.

As Leo and I got older, we went ice skating on Bad River. Initially, we used the clamp-on skates that our aunts and uncles had when they were children living in the Big House, but eventually we got shoe-skates. We would skate for miles, up Bad River until ice disappeared on its dried-out bed, down Bad River to its mouth, and out onto the Missouri River as far as Farm Island. Closer to home, we would build campfires on the riverbank to roast marshmallows and keep warm. Once we burned a dead hawk to cinders, making a big stink. Another time the fire collapsed on Leo's boots while we were skating, so he had to walk home wearing his ice skates. One winter, a Fort Pierre boy fell through the ice on Bad River while skating. The other skaters could see his face and hands pressed against the ice as the current carried him away. The town fathers decided Fort Pierre should have a skating rink to keep kids away from Bad River. It was installed on part of the town park between the river and downtown Fort Pierre. The west side of town had a hot artesian spring. A big iron tank shaped like a blimp collected the hot water so it could cool a bit, and then it was released through a pipe about eight feet above a wooden platform. If no girls were with them and it was a particularly cold day for skating, boys who were skating on the rink and lived on the west side would strip down to their briefs and stand under the cascading hot water to warm up before they went home. I did myself a few times, although it was out of my way home, and I can say that it was pure heaven. Sometimes boys would wait in line and shiver virtually naked just so they could stand under the hot water again and again.

Every spring, if ice broke up first on Bad River, it would pile up at the mouth against the Missouri River ice that was still intact. Then Bad River would back up and flood if the Missouri ice was late in breaking up. One year, the ice jam backed up Bad River way past the Big House on Hughes Hill. Rumbles sounded from the river as we were finishing supper. It was a sign that the ice was about to start moving out, so Leo and I went down to the railroad bridge below the Big House to watch. The Chicago and Northwestern Railroad track passed through the Hughes ranch as it followed the Bad River Valley from Fort Pierre to Rapid City. Maw warned us to stay off the bridge because one of the Tolton boys had been killed when a train crossed the bridge. On a dare, I decided to cross the blocks of jammed ice to the other side but, when I got there, the jam started to break up and move. I remembered Maw saying, "Stay off of the railroad bridge," so I had to re-cross Bad River by jumping from ice cake to ice cake, just like Liza in *Uncle Tom's Cabin*. Naturally, I slipped on one cake and fell in. I was able to scramble up on another ice cake before I was ground to bits, and I made it to the bank just as the whole jumbled mass became utterly chaotic and moved out. Maw called down from the Big House to tell us that *The Lone Ranger* would soon be on the radio. I yelled that we would be back soon, as I ran in circles hoping to dry

off but only freezing my tail.

Our younger brother, John Timothy, whom we called Tim, had an even closer call with Bad River. On 11 October 1949, when Tim was three years old, he had wandered off with his dog, Whiz, when Bad River was high from autumn rains. Whiz came running back to the Big House, where Maw was hanging laundry outside to dry, yelping and then running toward the river, and back toward the house. Leo and I were in school, and Paw was at the courthouse in Fort Pierre, where he sat as Judge of Stanley County. Maw frantically phoned him and the Fort Pierre volunteer fire department. Paw and several volunteers quickly arrived, and they followed Whiz to the riverbank, where they saw the place where Tim had slid into the river. They all began running alongside the river. Nearly a mile down-river, Paw and our neighbor, Quentin Sutley, spotted in the muddy current the red and blue corduroy jacket that Tim had been wearing. While some of the men restrained Paw, who was 50 at the time, Quentin Sutley and Johnny Huck dived into the river. Quentin got there first and pulled Tim out with Johnny's help. The jacket had trapped an air bubble that kept Tim afloat, but he was blue and unconscious. The fire department had just purchased a respirator, and some of the firemen had brought it to the riverbank. They immediately started giving oxygen to Tim and rushed him to Saint Mary's Hospital in Pierre. X-rays showed that both of his lungs were half full of the sticky Bad River mud called gumbo. But Tim lived. It was a miracle. So many things had to happen at just the right place at just the right time. We feared that Tim might have had brain damage from oxygen deprivation, but the cold water slowed his metabolism and Tim recovered fully. Even his lungs eventually cleared.

A benefit of growing up in a small town is the community support when a family faces a crisis. Women from Fort Pierre finished Maw's laundry and cleaned the Big House. The concern for our family and for Tim lasted long after he returned from the hospital. Curiously enough, the Sutleys lived in the house where, one evening many years earlier, my uncle Kie and others were playing cards with Bob Tolton, whose body was found on the railroad tracks a mile or two below the Big House the next day. They were all accused of murder, even Kie's brother Francis, who was in Minnesota at the time. By the time Tim fell into Bad River, Francis had been dead for many years and Kie had become a successful lawyer in Fort Pierre.

Tim was ten years younger than Leo and eight years younger than I, so he didn't participate in most things we did together. But we were delighted when he was born, and he was very much loved by all of us. He had a head of golden curls and we called him our Golden Tim. Eventually he did most of the things we did, such as being an altar boy, and some things of his own, like trapping along Bad River. One thing we did do together was sell berries to people living on the south side of Fort Pierre. We had plum bushes growing on the west side of our yard. Chokecherry bushes were plentiful in the woods along Bad River, and currant bushes grew along both Bad River and the Missouri River. Vines of wild grapes grew along the Missouri. We picked all of these, but especially plums because they were so juicy and so close at hand. Leo and I built a "covered wagon" for Tim out of a big wooden box. It had a roof, doors, and windows. We loaded it up with jars of berries, Tim got inside, and we would pull him through the neighborhood crying out, "Plums for the plummie!" We sold a lot of berries, and I still remember Tim's laughter. We teased him when he started to write his name. The letters were all there, but not always in the right order. So we would call him Mit, Imt, Tmi, Itm, Mti—anything but Tim. Now he calls himself John.

Another thing Leo and I did with Tim was take long hikes up Bad River and down the Missouri River. We picked and ate chokecherries, currants, and grapes along the way. The Bad River hikes followed the meanders of the river for miles, usually to the third or fourth railroad bridge, and then we would walk the railroad tracks back home, despite Maw's warnings. The Missouri hikes followed the Missouri Breaks down river on the west side for about five miles to what we thought was a trapper's log cabin that had been abandoned long ago. After Leo got married, his wife, Naomi, told him it was built by her grandfather Gates in the early 1900s. On some of those hikes, we would swim over to LaFramboise Island, and experience the tricky river currents and snags that sank so many steamboats on the Missouri. When Tim was small, Leo and I would carry him on our shoulders when he got tired. Paw's cousin, Pat Feeney, owned LaFramboise Island. It was named after Pierre LaFramboise, whose 18l7 trading post became Fort Pierre. He grew potatoes there. Mainly Pat raised registered bulls. His holdings were all over the upper Midwest.

Unlike Pat, we were “genteel poor” but didn’t know it. Paw was a judge and rancher. We lived in the Big House on Hughes Hill. We took short summer vacations to the Black Hills. But a county judgeship in Stanley County didn’t pay much, the ranch was small, and our vacations were cheap. We would attend the summer Passion Play in the Northern Black Hills near Sturgis, frolic in Evans Plunge, the warm spring-fed swimming pool at Hot Springs in the Southern Black Hills, see the buffalo and go through one of the many caves in between, view Roughlock Falls and Bridal Veil Falls in Spearfish Canyon, visit the concrete dinosaurs at Dinosaur Park in Rapid City, take the Needles Highway through tunnels to Harney Peak, see the faces on Mount Rushmore and, later, watch progress on carving Thunderhead Mountain into Chief Crazy Horse mounted on his pony.

When I was in high school, the U.S. Army Corps of Engineers began constructing a dam across the Missouri River five miles north of Fort Pierre. Pat ran a lot of cattle along the Missouri and Cheyenne Rivers north of the dam, and this land became gradually flooded after the dam was closed. Pat needed to move his cattle. He rode out to locate them but couldn’t find them. Then he heard them, followed the sound, and located them in the woods on a low hill that had become an island in the rising water. Many were already standing in water. He got a barge and after several trips rescued his herd.

Trunks in the basement of the Big House stored things that belonged to our uncles and aunts. A gas mask that fitted over the whole face, with goggles over the eyes and a long flexible breathing tube that ran from the mouth to a can that was a filter for mustard gas was left in one trunk by either Francis or Kie, when they returned from World War I. When I put it on, I looked like a creature from outer space. Tim was outside playing with friends one day, when he was seven or eight, so I put on the gas mask and a dark ankle-length wool coat that belonged to John F. Hughes. Tim didn’t know the gas mask was stored in the trunk. I raced up the cellar stairs and chased Tim and his friends around the house, roaring and bellowing and waving my arms. They were terrified. Then I ran over the hill out of sight, and later returned the gas mask and coat to the basement. For years after that, Tim asked me about the “monster” who came out of the basement and disappeared in the woods along the river. I told Tim it could have been an alien from Mars looking to kidnap boys and take them away to The Red Planet. He should be on the lookout whenever he went into the woods. I never told anyone it was a fake, until now.

One of our chores on the ranch was to keep the barbed wire fences in repair. This included replacing wooden posts that had either rotted out or been eaten away by grasshoppers. Some posts were eaten right down to the heartwood. Paw said grasshoppers did that in 1931, when a swarm flew in during the Great Depression. My only experience with grasshoppers was years later when I was driving on a remote road in western Stanley County. A swarm descended onto the asphalt in such numbers that I had to slow down to a crawl just to keep the car from sliding off into the ditch, because the road had become so slippery from driving over grasshoppers and crushing them. If my car had gone into the ditch I would have been helpless, but I couldn’t just stop the car and let grasshoppers get under the hood and clog up the engine. It was scary, and that was just a mild infestation.

Maw did the spanking (with a hair brush) when Leo and I got into trouble, but sometimes Paw did. Late in his life, he told me that he spanked us both in the basement of the Big House, and when he went back down to see if we were up to more mischief he found us asleep in a rocking chair hugging each other. Paw was touched. I was too young to remember the occasion.

Like John F. Hughes, Paw was both a rancher and a judge, but he operated on a smaller scale. His ranch was just the original three-quarter section Hughes homestead in the Bad River Valley between the two high hills, Black Top on the east and Camel’s Back on the west, and he was a County Judge, not a Circuit Court Judge. Both were elective offices, and he matched his father’s 36 years on the bench. He was judge of Stanley County for all of that time, and of Armstrong, Sully, and Hyde Counties part of that time. Those salaries were low, so Paw usually ran unopposed, but I vaguely recall Calahan opposed him once, and lost. Paw wielded a gavel from 1932 to 1968, when the lingering effects of a stroke in 1964 forced him to retire. County judgeships were eliminated in South Dakota soon thereafter. I appeared before him in Stanley County Court once, when I was about twelve. On the way home from school, I threw a rock at Maureen Schimming on her bicycle but it passed through a street light in Fort Pierre. I was turned in and appeared before Paw with two other juvenile malefactors. That spring, Bad River had again flooded the town park, which extended over several acres from downtown Fort Pierre to the river.

The whole area, even the ice-skating rink, had grown up in weeds from seeds brought in with the flood. Paw sentenced all three of us to weed the whole park by hand. It took all summer. We started at the downtown end and, by the time we got to the trees along the river, another crop of weeds had grown up behind us. So we had to start over again—and again and again. Paw wanted those weeds pulled out by the roots, so they wouldn't grow back. They grew from seeds brought down from the Badlands, so the weeds were tough with deep taproots. I didn't dare tell Paw I was "innocent" because I was aiming at Maureen on her bike. Paw was an elected Judge. He made sure voters saw his brat pulling weeds all summer--for the price of a lightbulb.

My older brother, Leo, also got a taste of Paw's justice. Isabelle Warne ran a grocery store in Fort Pierre, and one day she spotted Leo trying to "lift" a candy bar. He saw her watching, so he put it back and she said nothing to him. But she called Maw, who made Leo write, "I will not steal," 1000 times when he got home. Then Paw arrived, questioned Leo, and then took his two-foot-long leather razor strop from the faucet on the bathroom sink. Paw told me to go upstairs and told Leo to go down into the basement. I saw him follow Leo as I left. The Big House was heated by hot air that was piped from a coal furnace in the basement to registers on the floors or walls of every room in the house. The furnace was in the middle of the basement and, with the big pipes rising from it to heat rooms upstairs, it looked like some giant octopus. From my bedroom, I heard the whacks of the razor strop and Leo's shrieks coming up through those big metal pipes. They acted like megaphones and gave Leo's cries an unearthly metallic quality, like a trapped animal, that echoed from room to room all over the house. Leo never forgave Paw for whipping him "like a dog." It could have been worse. Paw sent a classmate of mine to the state reform school in Plankinton for some infraction.

Odd how memories differ. Leo had a paper route delivering the *Daily Capital Journal* to houses on the south side of Fort Pierre. Subscriptions were 35 cents per week (5 cents per edition) and Leo collected on Fridays. My memory was that Meta Shiflet phoned our house to say Leo overcharged her and Paw answered the phone. He told her, "I'll take care of it." That led to the whipping. I recall Leo screaming he didn't overcharge, but Meta trumped his word. Maybe I dreamed it. In any case it was chump change. Sometimes nobody was home when Leo collected, so he had to collect for two weeks. But it was Isabel Warne on the phone. Back then a candy bar cost 5 cents. Leo got "whipped like a dog" for 5 cents. I spent all summer pulling weeds for the price of a light bulb.

Paw's father, John F. Hughes, sent people to the electric chair. I have a vivid memory of Paw taking Leo and me to the state penitentiary in Sioux Falls to show us the electric chair. Perhaps it was after our "infractions" with my stone-throwing and his pilfering episodes. The electric chair may have been underground in a basement room, because there were no windows. The concrete walls were unpainted. The electric chair was made of heavy wood painted a sickly green. It stood in front of one wall. Thick leather straps with buckles were fastened to the arms and legs of the chair. Above the chair was a steel helmet that could be lowered onto the head of whoever was strapped in the chair. A heavy-duty flexible electric coil went from the top of the helmet to an electrical box on the wall behind the chair. A bank of big electric throw-switches were attached to the wall on one side. About eight feet in front of the electric chair was a row of bleachers three seats high where about twenty "witnesses" could watch each electrocution. I imagined being strapped into the electric chair, with no hood over my head so I could see the executioner throw the switches, one at a time. As each jolt hit me I saw all the perverts in the bleachers having multiple orgasms. Drool dripped from their grinning mouths. Their bulging eyeballs feasted on the flashing sparks and curling smoke. Their flaring nostrils sucked in the smell of burning flesh—my flesh. Leo has no memory of this trip. Perhaps it was just a bad dream like the "killer train" nightmares I had when I was younger, but I rarely threw a rock after that, except maybe to skip a flat stone across a pond.

Paw kept getting re-elected as County Judge partly because his rulings often measured justice with compassion (not that I noticed compassion when I appeared before him). Sol Hoy lived with his wife and six children across the railroad tracks on the south side of Fort Pierre (on the wrong side of the tracks, as they say). When Sol's wife died, the Catholic priest and town authorities tried to have the children adopted by different families. Even Mike Donahue, who was the County Sheriff, a fellow Catholic, and had a ranch neighboring Paw's in Bad River Valley, favored splitting up the family. "Otherwise they'll starve," was the argument. "Then they'll starve together as a family," Paw said, and ruled that the family

must stay intact. Sol and his children never forgot Paw's kindness. They survived as a family and the children are very close to this day. One of the Hoy boys told brother Leo about this many years later when they both attended a reunion of students attending school in Fort Pierre. Paw was the last County Judge in Stanley County. These judgeships were abolished statewide when better transportation made Circuit Courts more economical.

Paw was a big man, the biggest of John F. Hughes' sons. He was well over six feet tall, even in stooped old-age, and he had a huge big-boned barrel-chested frame. His fingers were like bananas. His three sons are six-footers; Leo is tallest, then me, then Tim. I'm a bit over six-feet, one-inch tall, and I weighed from 250 to 270 pounds during the six years when Paw lived with Bev and me in Maine. Paw was in his seventies and eighties then, and I look small in photographs alongside of him, even though I was heavier. I remember one time when I was a boy playing on the hillside next to the Big House. Paw came riding over the brow of Hughes Hill toward the house, whipping his horse from side to side with the reins. As the horse galloped toward the house, it collapsed and slid on its belly past where I was playing. Paw stepped off the horse, yelled at me to unsaddle it, and jumped in his Ford and sped off toward Fort Pierre. I don't know if he suddenly remembered he was to preside at a trial that day, or what. The horse got up and seemed no worse for the experience, but it gave me an appreciation of the old cowboy saying, "I feel like I've been rode hard and put away wet."

Paw was not cruel. He had John F. Hughes' blue eyes, but without the fierceness (people say I have John F. Hughes' blue eyes and fierce look). I mentioned the time when Leo and I were young boys and Paw spanked us in the basement of the Big House. He came down to check on us later and found us asleep in a rocking chair in each other's arms. Paw would tell that story with great tenderness. He seldom punished us. That was a task for Maw most of the time. Paw took over if the infraction was serious. I never heard Paw say an unkind word about anyone. Never. He never laid a hand on my mother, nor raised his voice to her, even though he had a terrible temper. He was a loner. Leo and I never knew him well. Tim knew him better. When they were alone after Maw died, Paw and Tim would go hiking and swimming together. When we were all still boys, Paw would go out after supper and drag in fallen logs from the woods along Bad River, and split them into firewood until it got dark. He had cords of wood six or eight feet high all along the driveway opposite the house. On Friday evenings he would go into Fort Pierre to play pinochle with men friends. Maw, who said it was his night to "howl," would go get him when she had enough of it. He didn't argue. He didn't drink and he rolled his own cigarettes. He gave up smoking during Lent, and after one Easter he never started smoking again. During Lent, we said a family rosary on our knees every evening. We never missed Mass on Sundays and Holy Days, and often attended Mass daily during Lent.

Mass was in Saint John's Catholic Church in Fort Pierre. The parishioners were mostly either Irish or German. The Irish families had a lot of tall big-boned people, especially the Duffys, Donahues, Hollands, and Giddings (McMullens on their mother's side) families, but also the unrelated Ed Hughes and Leo Hughes families. The long-time priest at St. John's was Father Guessen, who was made a Monsignor in his later years. At the end of every year he would read from the pulpit the amount contributed by each parishioner. One time, when going through the Hughes names, he came to Felan, paused, and with elevated voice announced, "Felon Hughes, fifty cents!" I wonder how much he would need to have contributed for Father Guessen to call him "Felan" instead of "felon," as if not giving enough to the Church was the same as stealing from it. Felan's ranch was at the head of Willow Creek, with about 30 miles of gravel and dirt roads to Fort Pierre, so he didn't get to Mass (and the collection basket) often. Many parishioners gave anonymously and Felan may have been one of them. The names Father Guessen read from the pulpit were mostly the parish Pharisees who wanted everyone to know how much they gave. Or so I thought.

All of the kids attended Fort Pierre High School, which was a public school, so Father Guessen brought nuns down from Deadwood for two weeks each spring to teach catechism to the Catholic students. Deadwood is an old gold-rush town in the northern Black Hills, and was made famous when Jack McCall shot Wild Bill Hickok during a poker game. Hickok was holding aces and eights, which became known as the dead-man's hand. Deadwood had a number of whorehouses. One was right next to the convent that sent nuns to teach catechism to us in Fort Pierre. When I was a boy, a forest fire in the Black Hills that threatened Deadwood attracted a photographer from Life magazine. He took a shot of

screaming nuns in their habits and whores in their skimpies running right toward the camera from their respective establishments, with the flames of the forest fire sweeping over the ridge behind them. It was a two-page photo.

To hold our interest, the nuns would read us stories of martyrs who were tortured to death for their faith. My favorite was Saint Lawrence. He was roasted to death on a red-hot gridiron. At one point during the ordeal, he said to his tormentors, "I'm done on this side. Turn me over and eat." I admired his sense of humor under trying circumstances. I had a mean streak as a kid. One time Gerald "Butch" Halloran stuck a tree branch in the spokes of my bicycle when I was riding home from school. I ran him down and tackled him. On the ground was a foot-long length of garden hose with a metal nozzle at one end. I beat him with that. In a fight with Billy Fischer, I had to be pulled off because I was choking him. He tells me I chased him with an axe on another occasion. One summer, I built a gallows behind our house and lured a neighbor boy, Leigh Schimming (my classmate Maureen's brother), over to "try it out." I had him stand on a stump and put the rope around his neck. I was ready to kick out the stump when Maw came running out of the house and put an end to the proceedings. I spent much of my study time in assembly halls at school drawing gruesome pictures. I still have a portfolio of them. Even when I was very young, I culled excess kittens when litters were born on our ranch. Our first dog, Tippie, had the long haired black-and-white markings of a collie. She bore two puppies one winter day. When the first puppy came out, I said, "Gee Whiz, Tippie set a pup!" The second puppy was sickly. When it died, Paw threw it in the coal furnace, while Leo and I watched, and remembered Saint Lawrence. I said to Paw, "Let me do it!"

We kept "Whiz" and years later he saved Tim's life. I drowned most of the kittens from two litters. We kept one from each litter, Snowball who was white and Nugget who had long golden fur. When skunks burrowed under our barn, baby skunks would come out into the chicken yard. I sat up on the roof with a pile of bricks. I dropped one that blocked the hole to their den and when they ran back and swarmed over the brick, I dropped the other bricks, one by one. Not a nice guy. Leo had set a fire to "smoke" them out, but only succeeded in igniting the barn. There was no serious damage, but some years later Tim succeeded in burning much of the barn.

At about this time, I started drawing pictures depicting violence and mayhem. Instead of studying at Assembly Hall in school, I would often draw one of these pictures and pass it around to other students. It was an outlet for the mean streak I had as a boy, and the mean streak would also come out when I had fights. I continued drawing those pictures through college and graduate school, with the only improvement being in the artwork. I still have a "portfolio" of those pictures, the last one dating from when I was about 25 and a graduate student at Northwestern University. It was a picture of a beefy bully ripping the lower jaw off of a pantywaist in suit and tie. Fellow students told me I was the bully (by then I was beefy) and my advisor, John Brittain, was the victim. They knew I tried his patience. I did some legitimate painting too. Mary Porter gave me lessons in pastel painting. She lived in a big house at the foot of Hughes Hill. By the time I took lessons from her, as I already mentioned, she was so bent over that she was looking between her legs when she stood up, and she had to walk backward to see where she was going. I painted mostly square-rigged ships at sea. The Dakota prairie was my sea. I hadn't seen the real thing. One painting was from my imagination, a ship with furled sails amidst gigantic waves lit by lightning flashes during a storm at night. I gave it to Leo. I have one of a Spanish galleon sailing into the sunset, embellished from a tiny ink drawing at the end of a book chapter. I still have it and my painting of the *Flying Cloud* in full sail, one of the last clipper ships, also copied from a small pen-and-ink drawing.

We had some remarkable teachers in Fort Pierre School when I was a boy. Elda Corey taught first and second grades, and taught music. Nothing fazed her. Leo invited me to his first-grade class one day, and I began to stack chairs. When I was in first grade, Mrs. Corey called me to recite in front of the class one day. I had to hop over a puddle of pee from the girl in the seat in front of me. Luadda Hoyt taught English and literature in high school. She had us diagram sentences and read some of the classic literature; *Moby Dick, Sohrab and Rustum*, and *Macbeth*, for example. Maxine Mitchell taught typing, shorthand, and junior business. Everyone took typing. She docked us one grade for each typing mistake, so we began typing slowly for accuracy and then typed for speed later. As I recall, Jim Hoffman, Leo, and I were the only boys to take shorthand. Lucille Schiltz, my Godmother, used shorthand as a court reporter for Judge Seacat in Mitchell and I wanted to learn it. Jim was our best athlete and people wondered why he would want to learn shorthand. I was glad he did because I had a pal to work with. The lesson that

"took" the best for me was in junior business. To illustrate *caveat emptor* ("let the buyer beware"), Mrs. Mitchell told us she had an eye on a purse in the window of the Hollywood Shop in Pierre but it was too expensive. Then she noticed a higher price tag on the purse one day. Some weeks later the newspaper had an ad announcing a "sale" at the Hollywood Shop. Mrs. Mitchell went there and saw the purse, still in the window marked down in price—to the original price when she first saw it. Elda, Luadda, and Maxine were still "at large" in the 1990s. I last saw them at one of the high school reunions.

Father Christian Hoecken, a Jesuit, baptized the first child born in Dakota Territory west of the Missouri at Fort Pierre in 1840, so my hometown has a Catholic history that spans many generations. For all of my heartless deeds and violent drawings, I was an altar boy for nine years. One time, Larry Giddings and I were serving at a funeral Mass for a Protestant that the nuns at Saint Mary's Hospital in Pierre had managed to convert on his deathbed. All of his family members in the front pews were Protestants. This was when the old Latin Mass was said in every Catholic Church. Larry and I went up to give the wine and water cruets to Father Guessen before the consecration. The wine cruet had about six drunken flies floating on the wine. When Father Guessen poured wine into the chalice, two or three flies flopped in as well. Larry was a big, good-natured redhead with a low threshold for laugher. When he began to contemplate what would happen next, he began to giggle and continued to giggle right through the consecration. When the time came for Father Guessen to drink the consecrated wine from the chalice, he spotted the flies and flicked them out with his finger. Then he drank the Blood of Christ. I thought, "The consecrated flies were now the Body of Christ. He should have eaten them." I suppose that thought is what pushed Larry over the edge. He couldn't stop laughing. Neither could I. I wonder what all those dour Protestants in the front pews thought of the Catholic Mass after that.

Bishop McCarty of Rapid City made Father Guessen a Monsignor. Monsignor Guessen could say Mass in 20 minutes, including the sermon, so a number of Catholics came over from Pierre to avoid Monsignor McGuire's long Mass. When Monsignor Guessen died, we got a young priest from Ireland, Father Leo O'Doherty. He was a good tenor, so most of the Pierre Catholics still came just to hear him sing, even though the Mass was longer. Greg Swanson was an altar boy for Monsignor McGuire and became a policeman (his father, "Doc" Swanson, was Swedish but he had married an Irish lass, so Greg was raised a Catholic). One evening Greg pulled over a weaving car on the Missouri River bridge and found Father O'Doherty behind the wheel drunk. Greg was going to let him off with a warning, but then Father O'D backed into the police car, so Greg had to make an arrest. Then Greg met with Bernie Duffy, a lawyer from an old Catholic family in Fort Pierre (Bernie had been a cowboy working for my father's cousin, Pat Feeney, and my Great Uncle, Andy Feeney, lived in the Duffy house in his waning years). Since the Missouri River divides Hughes and Stanley Counties, they decided the question of which county had jurisdiction couldn't be determined, so the charge of drunk driving was never made.

There was no Catholic school in Fort Pierre, so students at the public school were about half Catholics and half Protestants. The only case of anti-Catholic bigotry I saw was when Leo's class was planning the junior-senior prom, called Carnival. It included a supper that was scheduled for a Friday, which at that time meant Catholics couldn't eat meat. Catholic students suggested offering both fish and steaks. A vote was taken. All the Catholic students voted for that option and all the Protestants voted for steak only. The Protestants prevailed by one vote. Leo and other Catholic students boycotted the event. The Catholics in my class converted two students and were a majority when our turn came, so we had both fish and steaks at our Carnival.

I got into a lot of fights as a boy. Age makes a big difference in the early teens. I won fights with younger kids but usually lost fights with older kids. Leo was two years older than I and he won all of our fights, but he had a tougher time of it as I got older. Some of us Fort Pierre kids would hitchhike or just hike over to Pierre to swim in the Pierre pool. One time on the way back I got into a fight with Karl Fischer, Bill's older brother, and lost. Some guy watching felt sorry for me and afterward showed me how to apply a half-Nelson. I never lost a fight after that if I was able to apply it. The last time I used it was around 1990 in Bangor, Maine. My wife, Bev, and I had been taking in pregnant girls. One showed up penniless on our doorstep and said her landlord in Bangor, a husky guy named Reynolds, had made her pregnant and wouldn't return her deposit money. She was afraid of him because he was a wacko Vietnam War veteran. I went with her to get her money. He was waiting for us. Guns and knives were mounted on the walls inside his house and some towering fat slob was with him. Reynolds held out the money and

taunted her. I had to take it by force, and with the half-Nelson I left him unconscious on the floor in about ten seconds. The giant slob just cowered in the corner. Robert Mitchum used a half-Nelson on his victims in the movie *Cape Fear*.

Karl Fischer was Leo's age and Bill was my age. We went through twelve years of school together. They lived on the South Side of Fort Pierre, so we did a lot of things together and became friends, especially Bill and I. When we were juniors and seniors, we realized we needed good grades if we wanted to get into college, so we started studying together. The Fischers are one of the oldest families in Fort Pierre, and the Fischer Brothers General Merchandise store was founded in 1889. The original store was in Harrold, the town built on land owned by my great great uncle, Mike Feeney. When I was a boy, Fischer Brothers in Fort Pierre sold everything; groceries, clothes, saddles, boots, you name it. Most fascinating to me were the spring-loaded capsules that were stuffed with money and fired along ceiling-hung wires from every check-out counter to an elevated command booth in the middle of the store where bills were cleared, entries were made in the books, and change was fired back. Fischer Brothers even operated a delivery truck that brought groceries right to people's houses when they phoned-in orders. The store was sold in 1968, but Karl and Bill still live in Fort Pierre. Karl has a real-estate company and Bill had a bank, both located in Pierre. Bill retired from banking in 2013 and devoted his time to ranching. He takes me to see his cattle during spring calving and fall roundups. So I still get mounted on horseback from time to time.

Karl and Bill made a lot of visits to the Big House when my cousins, Mickey and Ann Schiltz, came from Mitchell for summer visits. Ann was Karl's age. She was pretty, had a bubbly personality, a terrific smile, a good figure, and wore short shorts (she denies this). Mickey was a shy blonde who was some years older than Ann, so she didn't get the same attention. All the boys from the south side of Fort Pierre would make the climb up Hughes Hill at one time or another just to ogle. I said to Karl Fischer, "Luxembourgers is good kids." He agreed, at least in Ann's case. We liked to dig trails along the steep side of Black Top, going to and from a big cave with a natural window far above US Highway 83. One time the Veverka family visited us. Mom's sister Dorothy had married Joe Veverka. Joe was an amateur photographer. One day he followed us up to Black Top and took pictures of Leo and me and the Fischer boys in the entrance to the cave. The cave was dynamited years later when 83 was moved closer to BlackTop. Maybe it had become unstable.

Girls wore knee-length dresses or skirts and anklet stockings. No miniskirts. Few wore slacks or blue jeans, but many wore short shorts in the summer and we boys liked that. We often went shirtless on hot summer days, but we wore long pants. Only "sissies" wore short pants, with one exception. Boy Scout uniforms included both long and short pants. Short pants came in two styles. Some slightly-built energetic boys favored legless short pants and anklet stockings, so their thin legs were fully exposed. More sedentary boys, often chubby, preferred thigh-length short pants and long stockings so only their knees were bare. Most wore long pants. Leo and I wore long pants. Outside of scouting, boys rarely exposed naked legs except in sports like basketball and track. But we swam bare naked in stock dams and rivers if no girls were around. Boys could wear matching jackets and short pants for "dressy" occasions, but few did. At fourteen, I ran for senate page and met senators at the Saint Charles Hotel in Pierre. A slender youth about my age wore a dark jacket that nearly hid legless matching short pants. His naked thin milky white legs got stares. I got the job.

The Boy Scouts were homosexualized in 2013. I Googled "Boy Scouts" and under "uniforms" were photos of Scouts in uniforms here and abroad through the years. One photo was of three slender youths in Boy Scout uniforms and holding hands in a homosexual parade. The back half of their short pants had been cut away to expose their bare butts. They gave the Boy Scout motto "Be Prepared" a whole new meaning. Boy Scouts are natural targets for male homosexual predators. When I was a boy I didn't know homosexuals existed. Now sodomy is "normal" in polite society.

When boys in their early teens are by themselves, they like to run around naked for some reason. Huckleberry Finn and his adult Black companion Jim were "always naked" rafting down the Mississippi. Leo and I and boys from Fort Pierre swam naked in Bad River during summers. The river had eroded a deep hole at a sharp bend, with a dirt cliff on the outer bend and a soft sandbar on the inner bend. We would jump or dive off the cliff into the hole, splash around, and then swim over to the sandbar and

sunbathe on the warm sand. At some places, trees on the riverbank had branches that overhung the river. We climbed out on one branch to tie on a "Tarzan" rope and then swing out over the river on it and drop into the water. We also played Cowboys and Indians in the woods along Bad River, and sometimes along the Missouri River when we visited the Giddings boys, Jerry and Larry. Boys who wanted to be Indians wore pants and put "war paint" on their bare chests or, mosquitoes permitting, were "naked savages" wearing only a skimpy loincloth. My "loincloth" was a shoestring holding two postcard-size bits of cloth, one in front and one in back, that barely (pun intended) covered my groin and butt.

As a teenager, I had the slender body of my grandfather, John F. Hughes. In later years it was much more robust, like his wife, Ellen. In those teen years I sometimes stood naked in front of a tall oval wall mirror in the Big House. I thought I looked good naked, a slim well-proportioned body with slender arms and legs. My ribs appeared and vanished as I breathed. My abdomen dipped inward from my rib cage to my pubic arch. My sharp iliac crests stuck out like little hatchet blades below my narrow waist. I liked that, so I wore my trousers low on my hips to showcase my "blades" when I went shirtless. But I rarely went shirtless in the summer, so I never had much of a suntan. As a hairy beefy-pudgy adult with big arms, I usually wore long-sleeve shirts, never wore short pants, and rarely swam in public pools. Why embarrass myself?

One time when some of us were playing Cops and Robbers in the woods near the Giddings house, Jerry and Larry got into an argument, Larry kicked Jerry in the shins and took off running. Jerry wound up and threw his full-size metal 45 caliber automatic toy gun after him. It whistled right past Larry's head. The Giddings boys lived in North Side of Fort Pierre on "Marion Island" beyond the Slough, which was a swampy area that had once been a channel in the Missouri River when part of the current sliced behind a sliver of the west bank and temporarily made the sliver an island. Jerry and Larry drove their grandfather's prewar Terraplane car to school, because Marion Island was a long walk from Fort Pierre High School. One Halloween Eve, I was roaming with Leland and Loren Carroll looking for mischief. They were big, husky kids. Leland was a redhead, so we called him "Red." Loren was blonde, so he was just Loren. We walked out to Marion Island and Red saw the Terraplane parked near the Giddings house. He lifted the hood and ripped out the wiring. Loren and I couldn't believe it, and we all ran off. Dick Giddings, Jerry's and Larry's father, heard us and came out of their house yelling, "Come back here!" Loren turned and yelled back, "I'll be damned to Hell before I come back!" Then he ran on.

Halloween pranks were a tradition with kids in Fort Pierre. The deeds were done on Halloween Eve, which we called Tick Tack Toe Night. The best prank when Paw was a boy was taking a cow into the Principal's office at school and leaving it there overnight with a bale of green hay. When the Principal came in the next morning, the cow had eaten much of the hay and shat all over the floor. He called in the janitor, who put a rope around the cow's neck and tried to pull her out. She panicked, and began charging around in the office, slipping and sliding in the crap, so the bookcases fell over and everything was upended. Then the cow slipped and fell and broke its neck and died. The cow was dragged down the hallway and out the front door, leaving a streak of shit.

Our best (worst?) stunt was taking "Sutley's Gut Wagon" and upending it inside Kelly's Chuckwagon Restaurant across Deadwood Street, when people were eating supper. Quentin Sutley, who had pulled Tim out of Bad River, had a meat market and slaughterhouse called White Way Lockers on Deadwood Street in downtown Fort Pierre. His butcher piled the guts from the hogs and cattle he slaughtered in a two-wheeled wagon out back. We called it Sutley's Gut Wagon. After we upended it, we ran to the top of the high shale hill between the railroad tracks and Deadwood Street, also US 83, and watched as Harvey Fackelman, the town cop, arrived to investigate. Fortunately for us, nobody identified us. If someone had, I would still be weeding the town park today. Ironically, Quentin later hired me to design and draw weekly advertisements in the Fort Pierre Times for his meat market and his appliance shop when I was a junior and senior in high school. Maw kept all of my drawings, pasting them in a notebook which I still have.

Most of our pranks were more benign. Some outhouses were still in use in those days. We liked to move them off their holes, in the hope that someone coming out at night to use them would fall into the hole instead. It would have been a soft landing. We put one outhouse from the town park in the middle of the bridge over Bad River. "Buck" Ronan came driving home after an evening of revelry at the Hop

Scotch Bar. He pulled up in front of the outhouse and bellowed, "Who put that goddamn whorehouse in the middle of the road!" Then he headed back to the bar.

No prank could top what happened when a circus came to town and Quentin Sutley arranged for the three circus elephants to perform on the sidewalk in front of his meat market, as a publicity stunt. The circus trainer put the pachyderms through their paces. The finale was when each elephant reared up and put its front feet on the rump of the elephant in front of it, and then all three marched in a circle in front of the store. One began to shit, the second then did the same, as did the third. Imagine soft turds the size of two-hundred-pound nail kegs dropping from six feet up onto concrete, again and again and again. When the trainer finally got his elephants away from Sutley's entrance, customers needed hip boots to go inside. Quentin got his publicity.

As long as I'm on this subject, I should mention Baird Langworthy. He had been peeing into a big can for weeks one summer, and when it was full he took it down to the woods along Bad River about a hundred yards from downtown Fort Pierre. Then he built a fire under the can and got the piss boiling. The breeze from the woods brought the stench right into the business district. You cannot imagine the smell of boiling stale piss. It made people vomit in the streets. Some of us finally tracked it down, but by then Baird could say "mission accomplished."

Leo and I and some of the other boys on the South Side of Fort Pierre would climb up on Black Top, the big shale hill where the Ku Klux Klan burned its cross in 1928, and cut trails along the steep side of the hill facing Bad River Valley. A cave with a big shale window overlooking the valley was near the summit of Black Top on that side. We used picks and shovels to cut a trail in the shale down to the cave, and a series of trails from the cave to other hiding points. We would roll big blocks of shale down the steep slope to scare drivers of cars down below on US 83, which went south from Fort Pierre. A deep drainage ditch between the highway and Black Top prevented most of the shale blocks from getting out onto the highway, but the drivers didn't know that. They would swerve their cars into the far lane of traffic when they saw the chunks tumbling down. Fortunately, there was never much traffic. When we got our trails dug, we would play Cops and Robbers on them. Another favorite place for playing Cops and Robbers or Cowboys and Indians was a winding arroyo in the Missouri Breaks east of Black Top and just south of the Stanley County Fairgrounds in Fort Pierre. It had lots of places for ambushes, and it looked like the settings for Western movies we would watch at the Saturday afternoon matinees in Pierre.

Fort Pierre had a real cops and robbers gunfight during the gangster era before I was born. In 1925, five bandits robbed the Fort Pierre National Bank of $11,000. My great aunt, Mary Feeney, was in the bank at the time and recognized one of them, George Jefferies (a local bad boy), even though they wore masks. He told her, "Now Mary, just stay still and you won't get hurt." One robber tied up the telephone operator, whose office was next to the bank. The operator got loose and made a call that was intercepted by Joe Depner, who ran a bakery nearby. John C. Hughes, Felan's son, told me that Joe was called the "buffalo hunter" because he occasionally brought buffalo meat to the Buffalo Café, which was located on the ground floor of the old Stockgrower's Bank building, where Paw had his law office (that wasn't the bank that was robbed). Joe crossed Deadwood Street to the F. S. Rowe hardware store, took a 30.06 rifle from the wall, loaded it, and started shooting when the bandits came running out of the bank. He shot one dead. The others escaped in their getaway car. They were later apprehended a few miles out of town. Felan was bringing a load of poles up the Sansarc trail that morning and he saw the gang when they were on their way to rob the bank. That evening, Felan told his son, "By God, Johnny, I saw George Jefferies with a group of men on the trail this morning." When I was a boy, reports came in that a Chicago desperado, George Sidney Sitz, was on the lam and heading into South Dakota. We were hoping he would come to Fort Pierre, so there could be another shootout.

Things like that gave Fort Pierre the reputation of being a wild town. It had two saloons, two taverns, and three package-liquor joints on Deadwood Street, which was only one block long. The Missouri River is the boundary between the Central and Mountain Time Zones, so the serious boozers from Pierre would come to Fort Pierre at midnight to get an extra hour of drinking. The Silver Spur owned by "Irish" O'Leary was the classy bar, Ed Duffy's Chateau was the quiet bar, and the Hop Scotch was the rowdy bar (but nowhere near as rowdy as a dive known as The Snake Pit, which Duffy owned and was at the south end of Deadwood Street). Marvin "Buck" Ronan was one of the serious drinkers.

The Hop Scotch was just across the street from his drug store. One night, a drinking buddy of his passed out. Buck went over to his drug store and came back with two big candles in candlesticks. “Lay him out on the bar,” Buck said. Then he put a candle at the man’s head and feet and lit them. “Now we’ll have services.” That sobered up a few of them.

Also across the street from the Hop Scotch, and next to the bank, was the town dance hall. Rex Terry, the banker, paid me a silver dollar to sweep the place out every Sunday morning after the Saturday night dances. I earned that dollar. The bathrooms were under the stage. There was often vomit on the floor in the men’s room and sometimes the toilet in the women’s room had run over because Kotex had clogged it. The musicians came from a wide area, and some of them were tough hombres. Ted Bordeaux was a Sioux Indian who played the steel guitar. Nobody messed with him. Rex was a Freemason and the Masonic hall was above his bank. His wife, Delia, was a Catholic. They are buried together in Scotty Philip Cemetery north of Fort Pierre. Her slab has a Celtic Cross carved on it and his has the Masonic emblem. My mother and father and two of his sisters are buried there. My bigoted Orange Irish great grandmother, Elisa MacMurray must be pleased that three of her Catholic grandchildren are buried in a Masonic cemetery, as she is herself.

My first job was as a ditch-digger when I was twelve or thirteen. Leo, I, and “Tuffy” Blaze liked to tinker with things. We called ourselves The Three Sorta Scientists (prophetically, we all got engineering degrees—close enough to scientists). Tuffy’s dad, Frank Blaze, needed a sewer line from his house to the main sewer line on the street. Tuffy was a husky kid, so his dad paid him fifty cents an hour to dig the ditch. Leo agreed to help for a fifty-fifty split, and then he hired me at ten cents an hour to help too. Tuffy’s dad had three kids working for him, one at 25 cents an hour, one at l5 cents an hour, and one at l0 cents an hour. Why didn’t Frank Blaze become a millionaire?

Tuffy was a good athlete. By the time he was in high school, he was about five-feet ten and he dressed out at about 250 pounds. He became the state high-school shot putting champ in track. In football, he played tackle but on short yardage plays we put him in the backfield and gave him the ball. He rarely missed making first down. He was our center in basketball. Although he wasn’t tall, he could muscle the other players out from under the basket to take his shots and get rebounds. I saw him pick up the back end of a car once. The only one who ever took him down in a fight was Jim Hague, who was older and faster. Jim became City Superintendent of Fort Pierre years later.

I wasn’t a good athlete, but I was stronger than other boys. My spare muscles lacked quantity, not quality. I could do fully extended one-handed pullups with either arm. I still can, but not as many. My one moment of glory was at a track meet in Pierre when I ran the mile on a quarter-mile track. The leader was close to overtaking me on his fourth and final lap when I was still on my third lap. The officials pulled the tape across the finish line as he approached, but I put on a burst of speed and broke the tape with my hands clasped over my head in victory. Some people who hadn’t been watching the race closely thought I had won until they saw me keep running to finish my final lap. My moment of infamy was during a football game at White River, near the Rosebud Indian Reservation. Their players were Indians and some were grown men. Their big fullback was Virgil Becktold. I was playing guard on defense when the guard in front of me “pulled” aside and I saw Virgil Becktold coming at me with the ball. I crouched down to meet his charge. One knee hit me in the helmet and I went over backwards. Virgil tromped over me and was twenty yards down-field before Jim Hoffman tackled him from behind. I liked football because I was strong and got to play, but I was no star. Our teams were The Fort Pierre Buffalos because “Scotty Philip of Fort Pierre saved the Buffalo from extinction.”

In basketball, I had the most fun during “shirts and skins” practice scrimmages. Girls could watch us. To me, “shirts” looked like sissies in short little dresses because their sleeveless jerseys covered their short pants. Being a “skin” was better. I wore my short pants low on my hips to expose my sharp iliac “blades” that made me look like a “skin” who was really skinny. Adolescent flab repulsed me. Larry Giddings weighed 235 pounds. His blubbery torso jiggled when he ran up and down the basketball court on the “skins” team. I called him “Guts” but soon stopped. He was too good-natured. Larry was athletic, tall and coordinated. Larry became an outstanding math teacher when Fort Pierre High School became Stanley County High School. He had the longest tenure of any teacher there when he retired. Larry’s older brother, Jerry, was about six feet seven inches. He didn’t play basketball because he had a trick

knee. I seldom got to play in games, so I skipped basketball for much of my senior year. The little East River town of Agar (under 200 people) always beat us. Their coach, Bill Pape, had toddlers on the Agar basketball court dribbling and shooting during halftimes of their games. Only boys played sports. Girls were cheerleaders. As far as I knew, we were all chaste. There was little dating and no pornography. Masturbation was taboo, and sodomy was unknown. Flirting was acceptable.

Hubert Hadorn coached all sports. He was intense and wiry with crew-cut black hair and he was a winner. He left to coach in Highmore after my freshman year. He was replaced by Duncan Kearns, who was big, beefy, balding, and a loser. He was called "Pinky" because of his florid complexion and red hair. Our coach taught world history, physics, chemistry, and all three sports. Hadorn had our respect, both as teacher and coach. I was something of a troublemaker. In the sixth grade, Mrs. Woosaw slapped my face hard on the first and last day of classes and on many days in between. But when I pulled some stunt in Hadorn's physics class, he just said, "Hang your head, young man!" And I did. Two years earlier, Hadorn literally butt-kicked Leo out of his physics class. One day, Pinky Kearns said in one of his classes, "I heard that Coach Hadorn got a gold watch when he left. All I'll get is a knife in the back and a boot in the butt." That's about what he got.

The big professional sport in Fort Pierre was the traditional Fourth of July Rodeo and the 4H Rodeo in August that Casey Tibbs started when I was in junior high school. A few of the older school kids competed in these rodeos. The events were saddlebronc riding, bareback riding, bull riding, steer wrestling, and calf roping Successful rodeo cowboys are often wiry types, because they don't hit the ground as hard and they mend faster. But some are burly. One of the burly ones was Jim Hannum, who was in Leo's high-school class. His dad, "Red" Hannum, was the foreman of Fischer Brothers' Ranch on Bad River near the hamlet of Wendte, south of Fort Pierre. At one of the rodeos, Jim came out of the chute on a horse that wouldn't buck, no matter how hard he spurred it. He cursed and screamed, "Buck you bitch!" It started to buck, Jim went flying, and the rodeo clowns carried him away with a broken leg. Another high-school cowboy was Jim Aplan. One time he hit the dirt stiff-legged on one foot after he was bucked off. The fibula leg bone shattered and the tibia leg bone went right through the heel of his boot and six inches into the ground. That ended Aplan's rodeo career. Billy Kelly, a wild kid a year or two below me, was more successful.

Pierre also had a rodeo during its Days of '76 annual celebration. Pierre Street would be blocked off and used for carnival rides, games, sideshows, and concessions. One year the sideshows included "Anna Mae Miller, the Girl in the Iron Lung." Polio was the childhood scourge when I was a boy, so I paid my quarter and walked up the steps to her trailer to have a look. The iron lung was a round tank about six feet long and two feet in diameter. It had windows on the side, a head hole at one end, and a leather diaphragm at the other end that moved in and out, cycling the air pressure inside the tank to make her breathe. Only her head was outside of the tank and she stared into a tilted mirror mounted above her face. I looked through the windows at her emaciated body, and watched her chest rise and fall as the leather diaphragm moved in and out. It was terrifying. Anna Mae was about my age. Was she destined to spend the rest of her life trapped in an iron lung? I didn't know. What if it stopped working? Would she die a horrible death? I didn't know. I didn't want to know. Gerald Cooley, a boy about Leo's age, had died of leukemia when he was only nine. One day we saw him attending classes and playing at recess. Then one day he was gone and we never saw him again. Donald Ochs was a "bleeder" who also died at age eight or nine.

One summer during those years, Colonel Tim McCoy came to Fort Pierre with his wild west show. He had been a cowboy star in the silent movie era and in the early talkies. Like William S. Hart and Tom Mix, he was a real Westerner who had been on the frontier before he went into the movies. He must have been in his sixties or seventies when he came to Fort Pierre. His roustabouts erected a "big top" tent in the city park I had weeded after a spring flood for my stone-throwing crime. The bleachers were full when Tim McCoy came riding in dressed in a fringed buckskin jacket, cavalry pants and boots, and a big white hat, and mounted on a magnificent white stallion. He took off his hat and waved to us as he galloped in a wide circle.

Then he pulled a carbine rifle out of the gun boot next to his saddle. High overhead at one end of the tent was a big rotating target with small colored balloons attached to its perimeter. As Tim McCoy continued riding in his circle, he started firing at the balloons rotating in their circle. He fired straight on,

over his shoulder, and from side to side, depending on where the horse was in his riding circle. Tim McCoy popped every balloon without missing a shot. There must have been a dozen of them. It was the most astonishing exhibition of horsemanship and marksmanship I have ever seen or ever hope to see.

When I was fourteen in the spring of 1952, Bad River and the Missouri River flooded simultaneously, making it the worst flood of the century in Pierre and Fort Pierre. It was worse than the 1905 and 1927 floods, which were mostly in the Bad River Valley. Snow had been heavy in the winter of 1952, and an early spring thaw sent a cascade of water down Bad River before ice on the Missouri had broken up. The wall of water piled the Bad River ice on top of the Missouri River ice, making a huge ice dam at the mouth of Bad River. A few days after high water crested on Bad River, a wall of water came down the Missouri River and it flooded. The two floods put about 85 percent of Fort Pierre under water. The Pierre business district was under water during the Missouri flood. Fortunately the railroad remained in service, and the Coast Guard arrived with amphibious boats called "Ducks" that were used to evacuate people, and then to carry sandbags to the Fort Pierre power plant to keep it from being flooded. The power plant looked like it was in a hole with the water brim full against the sandbags all around it. The sandbags eventually caved in and the power plant was flooded. Right up until that happened, we school kids were busy filling sandbags to be hauled over to the power plant. A Red Cross canteen was set up to provide everyone with black coffee to keep us awake. It had to be boiled to prevent typhoid. I never liked coffee anyway, but this stuff was so awful that even the smell of coffee brings back that terrible taste to this day. I couldn't drink it, so I just went thirsty. Another Red Cross canteen was set up in the Big House for isolated families on the South Side of Fort Pierre. Many people had to leave their houses. We took in the Strohfus, Shaffner, and Spencer families. All that summer, Leo and I had jobs shoveling river mud out of the basements of south-side houses in Fort Pierre.

When I turned fifteen halfway through my freshman year in high school, I served as a page in the South Dakota State Senate. Paw and Maw decided I should run for that position because Rex Terry, a native of Fort Pierre, presided over the Senate as the Lieutenant Governor and every senator was a Republican, so the time seemed right. They had name cards made for me and took me over to the Saint Charles Hotel in Pierre to meet all the senators personally before the legislative session began. The senators voted on the candidates. Three of us won, so I was a Senate Page in the l953 Legislature. Our main job was to get every bill from the print shop to each senator's desk well before debate on bills began. We also ran errands, such as fetching cigars for some senators. One thing we didn't have to do was empty the senatorial brass spittoons beside each senator's desk. All but one Representative in the House were Republicans. Among them was Joe Foss, a World War II ace fighter pilot who went on to become governor and a founder of the American Football League. What impressed me most about him, though, was that he looked like John Wayne. That was the year when the Legislature repealed the law that criminalized selling liquor to the Indians.

One senator, Roy Houck, later had a big buffalo herd on his ranch northwest of Fort Pierre. National television showed his herd on stampede, jumping his fence like a rolling river, during a particularly bad winter blizzard in 1996. Much of Kevin Costner's movie, *Dances With Wolves*, was filmed on Houck's buffalo ranch. By the turn of the century, buffalo (North American bison) were nearly extinct due to hunting and disease. Fred Dupree saved nine abandoned calves in South Dakota. His herd had grown to thirty-five when he sold it to "Scotty" Philip, who turned them loose on his 15,000 acre "buffalo pasture" north of Fort Pierre in Stanley County, which was named after Philip's son. Another blizzard, in March of 1966, was one of the worst in history. Houck's rancher neighbors, Bob O'Day and Jim Sheehan, lost nearly a thousand head of yearling steers in the storm, and Houck also suffered heavy losses. As a boy, Roy had seen the Philip herd and marveled at the massive power of the shaggy animals. Houck started buying buffalo after he purchased the Standing Butte Ranch in northern Stanley County in 1960. He moved the cattle from his East River ranch near Mobridge to his new West River ranch in a big cattle drive across the Missouri River and through the Cheyenne River Indian Reservation in 1963. His buffalo herd had grown to seventy head when the 1966 storm struck. While counting his cattle losses from the storm by air, Houck flew over his buffalo herd. The herd was in a V-shaped formation of bulls facing the wind, with the cows and calves sheltered between the limbs of the V. The bulls rotated from the tip to the limbs of the V to conserve energy, and the V formation moved constantly into the face of the storm. There were no losses. Houck realized that buffalo were genetically conditioned to ride out winter blizzards on the high plains of South Dakota, whereas his cattle were not. He decided to raise only buffalo

in the future. Houck had 3500 buffalo on 50,000 acres when *Dances With Wolves* was filmed in 1988. Roy Houck was a freshman state senator in 1953 when I was a Senate page. Even then, I knew this man had a future.

When I was sixteen and a sophomore, I became Patrol Leader of the Boy Scout troop in Fort Pierre. Under my leadership, we specialized in mayhem instead of merit badges.

When I was seventeen and a junior, Paw and Maw decided I should go to Boys State, which is a mock state government sponsored by the American Legion. Paw was the only Legionnaire who had a son in my class, so I had no competition. At Boys State, I was admitted to the bar, elected to the legislature, and appointed a police magistrate. The only one I know of who outdid me in reprehensible activities before or after being in Boys State is Bill Clinton.

When I was eighteen and a senior, I was Senior Class President and Prom King (actually, the Carnival King; our prom was called a carnival). The reason why I was Class President is because all of the most popular kids in my class had already been a class president before our senior year. The reason why I was Prom King is because it was traditional for the Prom King to kiss the Prom Queen, and my classmates saw this as the only chance to make sure I kissed a girl before I graduated. The Prom Queen was Bea Soesby, a pretty blonde. If I had to kiss someone, she was quite acceptable. Bea is now Abby Rathbun. She and Ray Rathbun still live in Fort Pierre.

When I graduated from high school, I had all the credentials that impress people; Senate Page, Boy Scout Troop Leader, a member of Boys State, Senior Class President, and Prom King. And every one was either rigged or a sham.

My job as a Senate Page when I was fifteen had a salary, and income taxes were charged on earnings over $600. Wanting to keep Uncle Sam frugal, I needed a summer job that kept me below that amount. Paw owned the building that housed Fort Pierre Cleaners. The owner had trouble paying the rent, so Paw said if he hired me for 35 cents an hour, he could cut the payroll and make the rent payments. I was put in a tiny back room that housed the gasoline washing machine, the tumbler that dried the gas-washed clothes, and the chemicals and steam gun for getting various stains out of clothes before they were washed. The steam presses were in a room between the front and back rooms, but the exhaust from the presses came into the back room. The only ventilation was from fan blades that turned slowly in a round hole cut in the outside wall. In short, I was in a sweatshop. It was the most grueling and hazardous job I ever had, given the stifling heat and the noxious chemical fumes that never really got flushed out. But I did get to meet Casey Tibbs when he brought in his grubby rodeo duds, and I did manage to keep my annual earnings under $600 so Uncle Sam couldn't go on a spending spree with my taxes. It was all worthwhile when I got to steam out all the grass, mud, sweat, blood, and horseshit stains from clothes worn by the hero of every boy in Fort Pierre, six times national rodeo saddlebronc champion, twice rodeo bareback champion, and once all-around rodeo cowboy champion. And get paid 35 cents an hour to boot!

Many years later, in 2005, I was awarded the Goldthwait Medal by the Byrd Polar Research Center at The Ohio State University. In my acceptance speech, I told the guests how special this was for me. To make that point, I described for them my summer job at Fort Pierre Cleaners and who Casey Tibbs was. Then I said, "Getting the Goldthwait Medal is right up there with getting the grass, mud, sweat, blood, and horseshit stains out of Casey Tibbs' rodeo duds. To appreciate that you would have to be a fifteen-year-old boy in Fort Pierre, South Dakota, when Casey Tibbs of Fort Pierre was Rodeo Cowboy Champion of the World."

Casey grew up on the Tibbs ranch on Mission Ridge and I grew up on the Hughes ranch in Bad River Valley, but we both claimed Fort Pierre as our hometown. In 2009 the Casey Tibbs Rodeo Center opened atop a bluff above Fort Pierre, just across Verendrye Drive from the knoll where the Verendrye Monument is located. There the Verendrye brothers buried a lead plate in 1743, upon which they inscribed a claim to all this land in the name of the King of France. Above both sites atop another bluff is the house where Casey's brother, Thad "Doc" Tibbs lived with his wife Nyla. Nyla was one of the Nash girls from the south side of Fort Pierre. After "Doc" died, Nyla sold their house to Bev and me in 2005. There we spent our retirement years.

I had become a glaciologist at The Institute of Polar Studies in 1968, before it became the Byrd Polar Research Center. Glaciologists are scientists who study the big ice sheets that cover much of Earth's high and middle latitudes during Ice Ages. The last million years encompass the Quaternary Ice Age. We're still in it. Ice sheets thousands of feet thick cover Greenland and Antarctica today. South Dakota east of the Missouri River is strewn with boulders brought down from Canada by the former Laurentide Ice Sheet during the last glaciation cycle of the Quaternary Ice Age. That cycle ended only eight thousand years ago. As a boy, I saw those boulders, some as big as a house, and I knew they were deposited when the ice sheet melted. Little did I imagine I would spend most of my life trying to understand how such mind-boggling things were possible.

When I was sixteen, my summer job was working for Bob Hutcheson, who sold and erected steel grain storage buildings for ranchers and farmers in central South Dakota. Leo had already worked two summers for him. Bob lived on the south side of Fort Pierre and had a passel of kids, all younger than I. The buildings were of Quonset design and were called Wonder Buildings ("It's a wonder they stand," we joked). The semi-circular ribbed arches that bolted together and constituted the self-supporting roof were factory-made and shipped to Fort Pierre, and the ends were interlocking sections of straight sheet metal that were cut to fit the ends at Bob's assembly yard. Then all the disassembled pieces were loaded on a flatbed truck and taken to the farms and ranches to be assembled. The truck towed a big two-wheeled cement mixer that was used to pour the footings of the foundation. One customer was Oldrich Drobney, who had a ranch near Martin in the southern Badlands. Bill Smiley, a Korean War veteran, drove the flatbed truck to Drobney's ranch on a winding road through the Badlands. Three of us were in the cab. I was next to the right-side door. We were on a dirt road with no guardrails. As Bill rounded a curve, a pickup truck was passing a car coming toward us. We were on the outside curve. The three vehicles passed side by side. All I heard was screaming metal. I looked out the window on my side and all I saw was the bottom of the canyon hundreds of feet below. I didn't see the road at all. All of us stopped to inspect the damage. The car had crowded against the canyon wall that rose up on the inside of the curve, and that side of the car was scraped flat. The other side of the car had a streak of red paint from the pickup. The pickup on the car side was scraped of most its paint, and on our side had deep gouges from the sheet metal piled on our flatbed truck. The wheel tracks of the flatbed disappeared off the road on the gorge side. I have no idea how our flatbed stayed on the road. Either our guardian angels held us up or all three vehicles were somehow locked together.

When we got to Drobney's ranch, we unloaded the truck and started assembling the ribbed sections, and unhooked the cement mixer so we could pour the foundation footings after lunch. While we were eating lunch, I made a deal with Bill Smiley that if I climbed into the cement mixer, he would give me a penny for every rotation until I told him to stop the mixer. We wanted to carry out the bet during lunchtime, so we went over to the mixer and I started to climb inside. Bill said, "Wait a minute. We should load it because we're making the pour right after lunch." I thought that was changing the rules of the bet, but said "okay" anyway. Bill threw in the cement and gravel and turned the water hose on the pile. Then I climbed in, sat on the pile, and braced myself against the mixer blades. Bill started the mixer engine and released the clutch lever to get the mixer barrel rolling. But he released the lever too fast, so the barrel began to turn with a lurch that jerked me away from my brace against the blades. I was tumbling around with the gravel, cement, and water. Bill was watching and counting the turns. Bob Brokaw, our foreman, came running and put an end to the proceedings. He had heard the mixer start up before he was ready for it. I crawled out of the mixer's maw with cuts and welts all over my body. The gravel and cement actually helped, because they cushioned my falls against the blades.

At another job site, Brokaw caught one of his crew goldbricking and chewed him out. After Bob walked away, the guy muttered, "It's bad enough I have to show up every day. You expect me to work too?" He didn't last long.

When I was seventeen, I was back to being a ditch digger, like I was when I was about twelve. After the l952 flood, Congress decided to put an end to flooding along the Missouri River by authorizing construction of a series of earthen dams across the Missouri River Gorge at various places in South Dakota, North Dakota, and Montana. The biggest of those dams was near the site of the old Oahe Mission, about five miles north of Pierre and Fort Pierre. It was called the Oahe Dam. Congress authorized archeological investigations of prehistoric Indian sites that would be inundated by the lakes

behind the dams. An archeologist named Wheeler from the Smithsonian Institution arrived in the summer of l955 to conduct digs at probable former Indian sites that would be flooded north of Fort Pierre. He hired Larry Giddings, Bob Ricketts, and me to dig for him. Bob was heavy and ran in slow-motion, so we called him "Rapid." Doc. Wheeler brought his daughter, Valerie, with him and we boys would serenade her with *The Happy Wanderer*, for which the refrain was, "Valerie, valerah, valerah, val-a-rah-ha-ha-ha, ha-ha-ha-ha!" That was a fun job and we did indeed find many Indian artifacts. To impress her we would hold our long shovels out horizontally at arm's length. I kept mine out with either arm much longer than Larry or Bob could with their shovels.

When I was eighteen, my summer job was with an extra gang on the Chicago and Northwestern Railroad. My great-great uncle, Mike Feeney, had brought the railroad into Pierre in l880. A railroad bridge across the Missouri River was completed in l907, and rails were laid up the Bad River Valley to Rapid City. A lot of Irish laborers were brought in for the job. They and the other workers settled in little towns along the way that divided the new railroad into sections. In subsequent years, each section of track was maintained by a "section crew" of four or five men who lived in these little towns. Others became ranchers in Bad River Valley, and their herds were brought to the towns during the fall round up for shipment east in cattle trains. Once every year a work train would go up Bad River Valley to supply gravel and wooden cross-ties and do heavy-duty work using machinery the section crews didn't have. Machines for each heavy-duty task were on special cars of the work train. When I was younger, in my childhood mind they seemed like torture devices. A steam locomotive pulled the train and blasted hot steam alongside the railroad tracks to kill the weeds. That also seemed menacing. I called it The Killing Train. When it came through, I would have a nightmare in which The Killing Train would leave the tracks and start up Hughes Hill to the Big House. Then it came up the stairs to my bedroom. I always woke up before it came into my room.

Even with the section crews and the work train, the overall condition of the railroad had deteriorated over the decades since the tracks were laid. The extra gang was to bring the tracks up to their original condition. About a dozen of us were on the extra gang, and we had help from the section crews for each section. Several Sioux Indians were on the crew. The Sioux are tall, big-boned people. I worked with White Buffalo, Crazy Bear, and Yellow Horse. They taught me some words in Dakota, their Sioux language. That summer, we rebuilt the tracks for the Fort Pierre, Teton, Wendte, Van Metre, Capa, and Midland sections, taking us about a third of the way to Rapid City. Only Fort Pierre and Midland were real towns. Teton was just a railroad siding and a sign. Van Metre was a ghost town. The Carters and Popes lived in Wendte, the Polers and Philip O'Connor lived in Capa, all railroad people.

In Capa, abandoned buildings included a Catholic church and a school with separate outhouses for boys and girls. Capa still had the big wooden water tower alongside the tracks that was used to supply the steam locomotives with water from a mineral spring that once supplied hot mineral baths in the Capa Hotel. We were really hot and sweaty when we got there, so I and a skinny boy we called "Slim" stripped naked and climbed up the ladder to take a swim in the water tank. A ladder went into the tank so we could climb out but we jumped in. Philip O'Connor, was a big husky lad about my age. He wanted to be a Catholic priest. He and his uncle, Tammy Poler, worked on the Capa section, but Tammy was practically an alcoholic. His eighty-year-old mother, Mary Poler, owned the Capa Hotel, which rarely did any business. Capa was one of the towns built in Bad River Valley by Irish immigrants who laid rails from Fort Pierre to Rapid City for the Chicago and Northwestern Railroad in 1907. Bovine was a rural post office near Capa that opened a year after the Great Sioux Reservation was opened for settlement in 1890. Capa made it obsolete. A sign (Bovine, 1891) marks its location. The only older Bad River "town" was Nowlin, west of Midland and established in 1890.

In 2010 I retired from the University of Maine and returned to Fort Pierre. Lance Nixon was the managing editor of the *Capital Journal*, the daily newspaper in Pierre. He was interested in local history for the *Dakota Life* section. In the summer of 2012 I took him up Bad River Road to Midland via Van Meter Road and Capa Road so he could see ghost towns built when the railroad went through. Van Meter, a ghost town when I was a boy, was altogether gone. In Capa, the hotel and the Catholic church still stood, as did the town school, with separate outhouses for boys and girls, all dilapidated of course. Capa was "haunted" by Philip O'Connor, the only "ghost" still living there. He never became a priest but he had become educated and well-travelled before returning to his roots. Lance did a *Dakota Life* story on

me and the Hughes family (21 September 2012), then one on the Carlisle family (28 December 2012) after I took him to Jim Carlisle's ranch, which was near the up-river part of the old Hughes ranch and was now 100 years old. Another neighbor in those early years was Paul Prairie Chicken, a tall 400-pound Sioux Indian whose house still stands. Jim Carlisle told us Paul shoveled all the manure from his barn into Bad River while sitting on a stool. He sat on his stool and threw shovels full toward the river, then moved his stool to that pile and threw it a similar distance, until it was all in the river. Lance's colleague, Allison Jarrell, did a *Dakota Life* story on Capa and Philip O'Connor (28 September 2012). She did another story on Irene Caldwell, who just turned 100 (24 January 2013). Irene edited the book, *Bad River, Ripples, Rages, and Residents*, published in 1983 by the Bad River Women's Club in Fort Pierre.

On the extra gang, rattlesnakes infested the big sandstone blocks that had been dumped at the ends of trestles and bridges to prevent erosion when the railroad was first extended up Bad River Valley. We would lunch at those places because the quarried blocks had flat faces that made good chairs and tables. As we ate, rattlesnakes buzzed their tails within the rocks under us. In one of the big downstairs rooms of the Big House, a tall wall painting showed two children playing in the woods with a rattlesnake coiled just inches away. A guardian angel hovered over them. It stayed in the Big House when we moved in, so I saw it every day. Brother Leo's elder daughter, Mary, now has the picture. The cattle had worn many trails on the side of Hughes Hill, and when I was a small boy I was walking along one of those trails and walked right past a coiled rattlesnake. I didn't see it until I almost stepped on it. It didn't strike. My guardian angel was looking out for me.

The hottest days on the extra gang were in July and August when there were few clouds. There were no shade trees along the railroad. When we worked in draws, there was no breeze. With the sun reflecting from the rails and the gravel, I expect the temperature got up to l20 degrees Fahrenheit at times. Even so, everyone kept his shirt on except "Slim" who had a slight frame, thin face, and boyish good looks. Slim never wore a shirt. All he wore were low-top tennis shoes with no sox and beltless trousers that hung so low on his skinny hips he had to roll up the trouser legs. He hopped off a sandstone block one day and his trousers dropped to his feet when he landed, leaving him bare naked. Slim had sharp elbows and knobby knees, all his ribs showed, his hipbones stuck out in front, his shoulder blades winged out in back, and his vertebrae protruded like beads down his backbone. Comic books back then often had *Charles Atlas* advertisement cartoons aimed at skinny boys. Slim was the 97-pound weakling in those cartoons. I mention this because within a year I would look like him. At the beginning of summer his smooth skin was creamy white. At the end of summer he was so dark and his blond hair had sun-bleached so white that he looked like a walking photographic negative. Despite his frail body, Slim was a good worker. Everyone worked hard. Working on the railroad was the best summer job I had, lots of fresh air and good exercise.

The railroad towns between Fort Pierre and Midland were Teton, Wendte, Van Metre, and Capa. When I took the gravel road along the railroad in 2013, Teton was just the siding (no sign), only one family lived in Wendte, Van Metre had neither buildings nor a sign, and only Philip O'Connor lived in Capa, but several empty dilapidated buildings remained, including the Poler hotel, Phil's house, the town school with outhouses, the Catholic church, and a big once-grand house at the edge of town.

During the summer of l957, when I was nineteen, Leo and I had construction jobs on the Oahe Dam that was being built across the Missouri River north of Fort Pierre. We worked on the "graveyard" night shift in the control shafts above the tunnels that would eventually deliver water from the lake behind the dam to the turbines that generate hydroelectric power. Leo worked the night shift in the tunnels. The US Army Corps of Engineers supervised all construction on the dam. I had graduated from Fort Pierre High School in l956, and I had just finished my freshman year at the South Dakota School of Mines and Technology. Leo was also attending the School of Mines. Two years earlier Maw had been diagnosed as having cancer. I have two vivid memories of that.

The first memory was from sometime between 1952 and 1955. Paw had put in a downstairs bedroom and bathroom after the 1952 flood, so Maw didn't have to climb stairs, and he converted part of the Big House into an apartment so she wouldn't have so much to clean. One evening I heard her crying from my upstairs bedroom and I came downstairs to see what was wrong. Paw was holding her in the new bedroom and he had the saddest eyes I have ever seen. I don't think we knew she had cancer then, at least

I didn't. Paw was in his fifties and he could no longer work the ranch, so he had leased it to Ivan Shiflet. Then he sold it to Quentin Sutley, our neighbor who pulled Tim out of Bad River in 1949. I had expressed an interest in eventually running the ranch and Paw said, "I'll sell this ranch right under your nose before I'll let you waste your life here." When he sold the ranch, I thought he was just making good on his promise, but he needed that money to pay Maw's doctor bills at the Mayo Clinic in Rochester, Minnesota. She was there in the summer and again in the fall of l955 for cancer treatments. Felan, Florence, and their granddaughter, Marietta, came to look after us and the house while Paw and Maw were in Rochester that summer. Then they moved to Arizona. Paw couldn't bear being with Maw during her agonizing cancer treatments. He felt helpless. For the next treatment, Maw left Pierre alone by train. Her sister Lucille (my Godmother) met her in Huron one cold December night and accompanied her to Rochester. Lucille drove her to Rochester once or twice after that, and Marguerite took her there once.

The second vivid memory is of one Sunday in July of 1957 when Paw took Leo, Tim, and me to Saint Mary's Hospital in Pierre to visit Maw. When we entered her room, she seemed to be asleep, but her eyes were shut tight and her face was twisted into such a mask of pain that I barely recognized her. Paw went over to her bedside, bent down, and kissed her on the forehead. She opened her eyes and immediately was all smiles. I burst into tears. Tim looked curiously at me because he had never seen me cry, and I grabbed his head and turned it away. Tim didn't yet know what I finally realized. Our mother was dying. Two weeks later she was dead. It was 25 July 1957, within three months from her fifty-sixth birthday (October twelfth). Her sisters, Lucille and Marguerite, were at her bedside, along with Paw and his sister, Josie Kelley, and our Fort Pierre neighbor, Mary Sweeney. They were reciting the prayers for the dying with the chaplain, who had his finger on Maw's pulse. He nodded to them when her heart stopped beating and everyone said, "Eternal rest grant to her, O Lord." Lucille told me that many years later. Paw never mentioned it, at least to me.

Some years later, my Godmother, Lucille Schiltz, showed me a letter Maw had written to all her brothers and sisters on 24 June 1957, saying the doctors at the Mayo Clinic couldn't find any cancer in her but she was in such constant pain that she could barely sleep or move. They had subjected her to prolonged x-ray treatments, and had put radioactive cobalt capsules in her uterus where the cancer was located. This "therapy" burned her flesh so she suffered excruciating pain every time she needed to pass urine. In fact, she died of urine poisoning because she couldn't pass it at all eventually, so it backed up into her body and killed her. That blockage and burns from the x-rays and radioactive cobalt were more painful than the cancer. Imagine being unable to urinate--ever--despite the pain. The doctors made her a guinea pig for their experiments and tortured her to death, while telling her they couldn't find any cancer.

Here is the letter Maw wrote, a week after she read letters from her brothers and sisters in the Round Robin that she had initiated earlier that year when she attended her mother's funeral in Mitchell. Our last photo of her is from that visit. She is seated by the kitchen table reading Round Robin letters. She looks healthy and serene.

My Mother's Last Letter

Fort Pierre, S. Dak.
June 24, 1957

Dear Family,

The Robin lit the middle of last week so here goes to send him on his way again. It was so nice receiving him and learning about all of you.

First of all—about Leo and Terry. They arrived home on June 7 from a very busy and successful year at Mines. Terry received a Metallurgy scholarship for next year as that is what he has decided to make his major. Leo plans to go with his class the week before school starts this fall on an extensive geology field trip through Yellowstone, etc. They both are intensely interested in their work. When they arrived home, I decided that I would ask St. Joseph to help them get jobs; I chose him because I thought he might have a little more time to devote to my petition. I put it right up to him, asking him to see that they had jobs by Friday night. If they did, I would continue with the special prayers until the end of June. At 3 on Friday,

the Employment Office called and said there was a chance for two young men with Oahe Constructors in the tunnel area. Now, the best part of it was that the boys had been all over the dam earlier in the week and had been told right and left that no college boys were wanted for they wanted someone who would stay right on the job. The boys went out prepared to work, lunches all packed and a goodly supply of work gloves. They didn't return until after the first shift. So you see, Good St. Joseph really was on the ball for us. The boys work a 48-hour week at $1.47 an hour with time and a half for overtime. They have night shifts which vary according to the job they are doing. So far Terry has put in three 12-hour days and Leo has put in four or five. Terry is in the control shaft of the one tunnel—midway between the entrance and exit of it. Leo is just inside the exit, preparing for the spillway which will lead from the tunnels. It is dirty work and tiring, but those two have always been able to do whatever is expected of them. Leo hopes to make enough to finish his senior year, with the Personnel Office job. He has used up all his bonds, his stocks and his savings so he starts from scratch. Both boys started working for good money following the 1952 flood so Terry has a much better financial backlog than Leo had. Terry has about $1600 in savings besides his bonds and stock. Most of the boys around here are working this summer; there are very few idle ones and those just because they are lazy.

Tim right now is busy with catechism; the Sisters are here for two weeks. I guess the enrollment is crowding 150 for the first eight grades. There are three Sisters. He has come home with a medal of honor and with a rosary so far. He is the fisherman of the family. Yesterday he caught his first catfish; the others have all been bullheads. He made his own rod and reel out of a spool, etc. He goes just behind the house and under the bridge.

The State Women's Clubs have a project on Pioneer Women of South Dakota. One of the Pierre women asked me to write up about Mom after seeing her obituary. So I did. I sent a copy to Bert to have Uncle Will verify and then I thought she might make copies for all of you. I also did one for Mother Hughes. Of course the big story in that was the 1905 flood when they lost all they had and almost lost their lives.

Then I wrote Berna and asked her to check with Celia and John Bouquet and Mrs. Welscher on some facts about Dad's early life. I thought that just for our own pleasure I might write up a similar one about Dad.

Now comes the part of this letter that I don't like to write and that is the state of my health. As you all know, I definitely do not have cancer now. That trip to Rochester with Marg in Lu's car gave us that satisfaction but gave me no relief from the hurts, aches and pains that I have been constantly having since mid-February and which have been steadily becoming more painful. Two weeks ago, I think—I hope—the climax was reached, and now maybe I can begin to regain my strength. I hope no one of you ever suffers from muscle spasm. I understand there is very little that can be done to relieve it, that one must just sweat it out, especially when you have had the cancer therapy that I have. My right leg swelled to one-third its normal size and made it almost impossible for me to walk. I became allergic to aspirin which the doctor had recommended and then was so sick for several days until all that was out of my system. Now I literally sweat it out; I take anywhere from four to six hot—and I mean hot—twenty-minute baths a day; Leo massages me until I think he is tearing out the muscles. I sit for 15 or 20 minutes, then I must change my position. I walk with a cane but not very far or very long at a time. I have difficulty sleeping until I drop off for two or three hours from utter exhaustion. But, enough of that part. I have not been upstairs or in the basement for over two months. When the weather is warm enough I go for a little ride but not over twenty minutes. Fortunately the lady in the apartment—even with her ten children, the oldest of which is 12—is very wonderful to me. She does the laundry and she and her daughter go over the house twice a week. We gave them three bedrooms upstairs when she volunteered to be such wonderful help. I want you to know that I am fighting every single minute, that very seldom do I cry—but I do when the very bad muscle spasms hit, for crying seems to help me relax. I haven't been to Mass for several weeks, can't even walk about the lawn. But I do get the meals and usually do the dishes so I don't feel completely useless.

Now just imagine what Papa Leo's job is! He has surely been a tower of strength and has taken on all these extra tasks such as picking up things from the floor, which I cannot do. The good Lord surely should have a wonderful reward for him. He goes to Highmore once a week as county judge; he does all the outside jobs with Tim and with the boys besides all the things that need to be done in the house.

Helen, his sister, died of cancer just about ten days ago. She had taught up until April 29 this year when she went to the hospital. She had enough deep therapy so that she didn't need too much medication to relieve the pain. Hers, as you may remember, was discovered some four months after mine, but hers had metastasized. However, she did go back to teaching and almost completed the year. She did not know how bad hers was and kept hoping that she would recover.

I'm anxious to see the apartment (the Schiltz apartment in Mitchell) since it is rearranged (after Clara Schiltz's funeral). I don't imagine I will for I know that I could not even make a trip to Rochester except by plane and then with a wheelchair available there. Where do the three of you plan your vacation?

Felan is here from Tucson, has Helen's apartment. Irene and Ret were also here for the funeral. I couldn't go. Leo and Terry were pallbearers and Tim served Mass.

We had a terrible accident on the railroad bridge behind the house mid-morning yesterday. A drunk (local) was crossing the bridge and somehow fell across the tracks and was hit by a train. Whether he'll live, I don't know. (He died.) The train was surely noisy trying to get him off the tracks.

Our rains continue; the country looks beautiful, and the weeds flourish.

I surely enjoyed all your letters—I'm tiring now—have done this in relays. Don't feel sorry for me—just pray for me!

God love you

MARY

That year, 1957, was the worst of my life. The pall of death hung over our family. Grandma Schiltz died in March. Our last trip to Mitchell as a family was to attend her funeral. Aunt Helen, Paw's sister, died of cancer in June. Then my mother died in July. Christmas was grim. We wanted it to be a happy time for Tim's sake. He had turned eleven on September eighth, just weeks after Maw died. We got the cedar (juniper) branches from trees on the Missouri Breaks, as always, and constructed our usual pungent Christmas tree. But Kie and Helen were absent. They traditionally joined us for Christmas dinner and they always treated Tim like Tiny Tim in *A Christmas Carol* after he almost drowned in Bad River in 1949. Kie, who had a law office in Fort Pierre, had died suddenly of a heart attack in l954, while watching a baseball game in Pierre. His wake was held in the Big House, and Helen was so grief-stricken that she almost dove into the coffin with him, crying out, "Poor Kie!" Wakes in the Hughes family were traditionally held in the Big House. Many big lilac bushes grew in the yard, and their blossoms were used at the summer wakes. To this day, the smell of lilacs is for me the smell of death. What reminded me of the scent of lilacs that Christmas was not the absence of a favorite uncle and aunt. Someone else was missing. My mother.

Her final sickness and death took its toll on us all. My first driver's license at fifteen had me five feet nine inches tall and weighing 135 pounds. During my senior year, when I was eighteen, I was six feet tall and weighed 145 pounds. The next summer, when I was nineteen and working the night shift on the Oahe Dam, Emil, one of the older men on my shift, asked me how much I weighed when we were in an elevator that went down to the tunnels. I wasn't eating much and knew I was going from thin to skinny because I swam naked in Bad River behind Hughes Hill every morning after work. I didn't mind being skinny. But this time I saw how skeletal my body had become. I was as skinny as Slim, the blond youth on the railroad extra gang, only I had black hair and no suntan. If he was a walking photographic negative, I was the walking positive print. When I stretched out to dry on the warm sandbar after my swim, the "blades" of my sharp iliac crests I had admired now looked grotesque jutting from my sunken abdomen. Back at the Big House, I stood naked in front of the tall oval wall mirror and ran my fingers over bones protruding from my shoulders to my groin. Then the naked skin-and-bones boy in the mirror smiled at me and began to pose. Was he tempting me to be even more skeletal? On a store scale I discovered I weighed only 120 pounds clothed, a few pounds less if naked. Did I have a death wish? That

thought scared me enough to start eating more.

By the end of summer I wasn't quite so skinny. When I returned to college that fall after Maw died, I decided to go out for football. My height and weight were recorded during my physical examination, and were entered in the team roster. The little booklet listing team members had me down as six feet one inch and 135 pounds. It was the same weight when I was fifteen, but I was nineteen and four inches taller. That was the toll Maw's suffering and death took on me. It was also the year of my worst grades in college. I matured physically only during my last year. When I graduated, I was six feet one and a quarter inches tall and weighed 225 pounds. Those 90 pounds put lean muscle on my thickening bones. Every pound added since then has been meat marbled with fat. Twice I topped off at 300 pounds, but was usually from 260 to 270. The lithe youth with the smooth adolescent body was history. I miss him but his spirit remains.

Maw's death took its toll on Leo too. He went to the School of Mines two years before I did. He did okay in his freshman year, but he joined a fraternity and started to booze and carouse during his sophomore year and his grades plummeted. He probably realized sooner than I did that Maw was dying. He got kicked out of the School of Mines the year Maw died, and he went to work for the State Highway Department in the soils laboratory in Pierre. There he met Naomi Gates and she began to straighten him out. They were married by a Justice of the Peace in February of 1959 and in the Catholic Church in September of 1959, which is what Maw would have wanted. Leo got back into the School of Mines that fall, having missed two years. A year later their first child was born, and they named her Mary Susan Hughes, after Maw. Leo graduated with me in 1960. They had two sons, Leo Shannon and Sean Timothy, and another daughter, Erin Alane. They celebrated their Golden Wedding Anniversary in 2009, all children and grandchildren attending.

Maw's death also took its toll on Tim. He turned eleven just after she died. Paw seemed to lose interest in life, so Tim almost raised himself. Paw asked two of Maw's sisters, Bert and Marguerite, to raise Tim. They declined, which led to a special relationship between Paw and Tim that Leo and I never had. They did many things together, going swimming, putting a low concrete wall around the plot where Maw was buried in Scotty Philip Cemetery, and landscaping Paw's lots on the Mary Knoll part of Hughes Subdivision on Hughes Hill. After Tim graduated from high school in 1964, he attended Black Hills Teachers College for two years and then dropped out. Maw would have made sure that he graduated from college. He went back to live with Paw in Fort Pierre. When that wasn't going well he stayed with Paw's sister Josie in Pierre. Josie's husband, Frank Kelley, had died in 1953. He may be South Dakota's greatest athlete. He held two indoor world records in the high hurdles. Another track record lasted 26 years. He led South Dakota State to an undefeated football season and a bowl win in Hawaii. He also played professional football in the era of Red Grange and Jim Thorpe. The Cleveland Bulls (later Browns), Chicago Bears, Green Bay Packers, and Kansas City Cowboys made offers. He played for the Bulldogs, Packers (with Red Grange), and Giants. He played professional baseball with the Saint Louis Cardinals. When he returned to Pierre as a pharmacist, he coached the Pierre American Legion baseball team to five consecutive state championships. That team is still remembered as Kelley's Kids.

While Tim was staying with Josie, he met Eileen Frazer, a Pierre girl, and married her. They had three children, Brian, Brett, and Tara. Tim has a rebellious streak. He decided the Federal Income Tax was unconstitutional, and refused to pay it. That kept him from owning property in his name for years because the IRS would confiscate it for back taxes. IRS could seize his wages if agents found out how much he earned. Part of Maw (a small part) would approve. Tim eventually cut a deal with IRS that allowed him to start an upholstery business and purchase land in Colorado, some in the mountains and forty acres of "rattlesnakes and cactus" on the plains between Colorado Springs and Pueblo, where Tim lives to this day. Tim is a survivor.

The toll was worst on Paw. He never did recover fully from Maw's death. He hired a housekeeper, Edith Tassevigen, who noticed that some mornings he would get up disoriented and forgetful. They were mini-strokes that went unheeded, because they didn't last. Then, three years after I entered graduate school at Northwestern University, he had a massive stroke in 1963 that left him partly paralyzed on one side and unable to speak coherently. Maw would have seen the warning strokes for what they were, and insisted that he undergo tests until the cause was discovered. It was a clogged artery to his brain. It could

have been cleaned out and that would have prevented the massive stroke. I returned to South Dakota, took care of Paw's business left hanging, took him to McKennan Hospital in Sioux Falls where doctors tried unsuccessfully to reopen his artery, and then got him into Hot Springs Veterans' Hospital in the southern Black Hills for physical rehabilitation. To prove that he qualified because he was a World War I veteran, I had to hunt down his honorable discharge certificate. After that, he stayed at the Big House in Fort Pierre and even resumed his duties as Stanley County Judge. When that was no longer possible, Josie and I got him admitted into Maryhouse, the Catholic nursing home in Pierre. There he stayed until Bev and I brought him with us to Maine in January of 1975.

Andy Feeney, my great uncle and the last surviving Feeney who was born in Ireland, spent his last two years in Maryhouse, and died in 1956 at age 86. It was the year I graduated from high school. After he retired from his Bad River ranch in l928, he lived in the Duffy house in Fort Pierre. Maw would take us there to visit him regularly. He gave us candy, and told us stories about his cowboy years on West River roundups. In l95l, Maw wrote down his account of tracking down the murderer Kunnecke in March of l903, shortly after Andy became sheriff of Old Stanley County.

Maw started the Round Robin letter with her brothers and sisters at her mother's funeral in 1957. I have a photo of her taken then. She looked fine. A few months later she was dead. The plan for the Round Robin was that, as the oldest, she would write what was going on in her life and send the letter to the next oldest, who did the same, until the youngest returned the package of letters to Maw. Then Maw would pull out her letter and write a new letter relating everything that happened since her first letter. This has been going on for five decades until 2009, and it includes letters from three generations of descendants of Jacob and Clara Schiltz. It has become Maw's farewell gift to her family. Maw was born on 12 October 1901. She liked to say she and Columbus discovered America on the same day. Maw's three sons with some of her nine grandchildren were at a Schiltz family reunion at Fort Robinson in northwestern Nebraska a century later, in August of 2001. Agnes and Lucille were over 100 in 2009. Bert would be well over 100 had she not died at age 97 after a car accident. Dorothy entered her 90s in 2012. Maw died at age 55.

Maw was buried in Scotty Philip Cemetery, just north of Fort Pierre, county seat of Stanley County, which is named after the son of James "Scotty" Philip. Scotty Philip was born in Scotland and the cemetery is Masonic, but many Catholics are buried there. Scotty Philip is among the handful of men who are credited with saving the buffalo from extinction, because he rescued a few and let them breed on his buffalo pasture where the cemetery is located. Calves from his herd were the beginnings of the big buffalo herds in the national parks of the Black Hills. Trees, shrubs, and flowers around the graves in the cemetery are watered from a natural spring on a nearby hillside of gravel that was dumped by the big ice sheet on one of the few occasions when it advanced beyond the present-day channel of the Missouri River. Paw is buried beside Maw in the Hughes plot, along with his sisters, Irene and Josie, and Josie's husband, Frank Kelley. All those Hughes Catholics are buried in a Masonic cemetery, just as is their Orange Irish grandmother, Elisa MacMurray Hughes, in Davenport, Iowa, by her own wish. The John F. Hughes family plot is in Calvary Cemetery, a Catholic cemetery high on the Missouri Breaks across the Missouri River in Hughes County, but in sight of Scotty Philip Cemetery. Margaret Connally Feeney and all her children are buried there; my grandmother Ellen, Michael and his wife Essie, Andrew, and Mary. John F. Hughes is there with Ellen and John his namesake, Josie's twin sister Agnes (Margaret's middle name), along with sons Francis and Kiran, veterans of The Great War. Of all the prairie songbirds, the call of the meadowlark is the most beautiful and lonesome. Meadowlarks are always seen darting among the tombstones and nesting in the foliage of these cemeteries. Their mournful cry is forever in the air.

Photos for Chapter 1: Origins

Photos are numbered from left to right and from top to bottom.

1. My father Leo J. Hughes as a cowboy on the Hughes cattle-and-horse ranch in Bad River Valley. He took over running the ranch from his older brother, Felan, my godfather.

2. Me with my brother Leo in the yard of the Little House in Fort Pierre. I started life as an Aryan. Then the dysgenic genes kicked in.

3. My second birthday outside the Little House, 15 February 1939. We all "peak" at two.

4. Leo and I in cowboy suits made by our mother Mary. She took all but two of these photos.

5. The Big House on Hughes Hill. My grandfather built it after the 1905 flood of Bad River took out his original house by the river. We moved into the Big House when I was six, after my grandmother had died in 1944 and grandfather had moved to Pierre.

6. Paw with Leo and me atop Hughes Hill watching Bad River flood the Hughes cattle ranch. The two-humped hill in the background is Camel's Back. The C&NW railroad crossed our ranch.

7. Paw, Leo, and I with our horses, Starface (Leo's horse), Blackbird (my horse), and her palomino colt, in the pasture on Hughes Hill. The barren hill in the background is Blacktop. It had a cave.

8. Paw's oldest brother, Felan, with me. Felan is my godfather. The house in the background is where Paw's other older brothers, Francis and Kiran, were accused of murdering Bob Tolton.

9. Leo and I in the cave on Blacktop. Many years later, the "government" dynamited the cave so it wouldn't collapse from its own weight and tumble onto U.S. Highway 83.

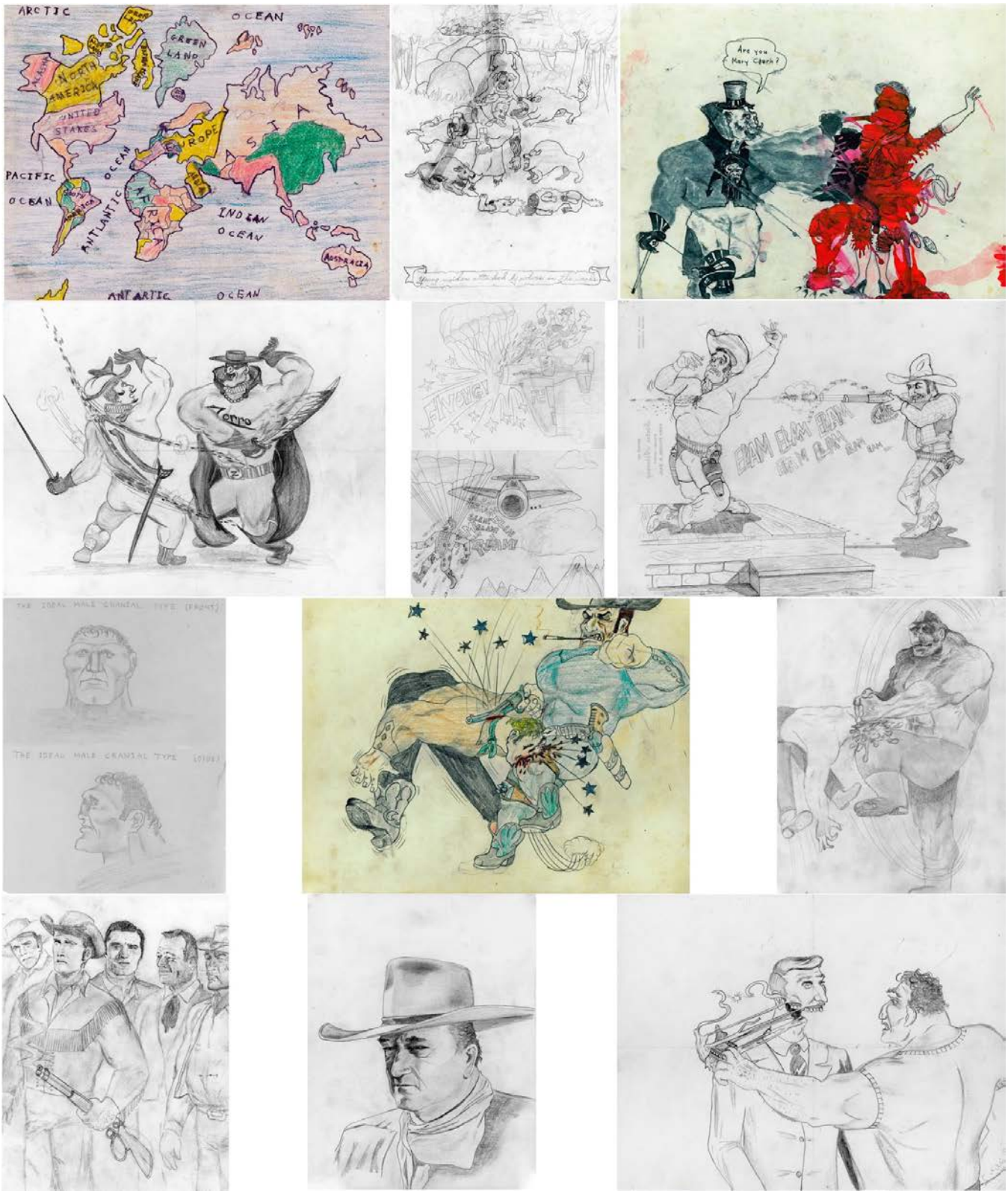
10. Me in 1950, age 12, with the pirate ship I carved from a log after seeing the Walt Disney movie, *Treasure Island*. Fifty-three years later I assembled a model of *Le Soleil Royal*, flagship of the French Navy, with 103 cannons and 22 sails, commissioned by Louis XIV of France in 1669.

11. My younger brother John Timothy with his dog Whiz, when Timmy was three years old. A few months after Maw took this picture, Whiz saved Timmy from drowning in Bad River.

12. Paw, Maw, Leo, Tim, and I in the yard outside the Big House in 1952. Leo was sixteen, I was fourteen, and Tim was six. The family resemblance of us three boys is striking.

13. Deadwood Street in Fort Pierre during the 1952 flood. From left to right the buildings are the Hop Scotch Bar, Rowe's Hardware, Kelly's Café, the Chateau Bar and Grill, the Duffy building, and the Stockmen's Café. Next was a saloon called "the snake pit" that Sioux Indians patronized.

14. The last picture of my mother, in Mitchell in 1957, three months before she died of cancer. Maw is writing "thank you" letters to people who sent sympathy cards when her mother died.



Drawings for Chapter 1: Origins,
Sheet 1.

Drawings are numbered from left to right and from top to bottom.

1. A map of the world I drew when I was seven years old.

2. “Young Maiden Attacked By Wolves In The Woods” is a drawing I made in grade school.

3. This is Jack the Ripper slicing up a prostitute. I drew it after I saw a movie in which Jack asked "Are you Mary Clark?" before he took out his knife, a Gurka knife in my drawing.

4. Zorro cutting his signature "Z" in an adversary.

5. Drawings I made during World War II and the Korean War. The "bad guys" win.

6. I call this drawing "The Back-Shooter."

7. In high school I drew "The Ideal Male Cranial Type, Front and Side Views" after seeing imaginary drawings of cavemen in a book on human origins. Note the tiny brain pan.

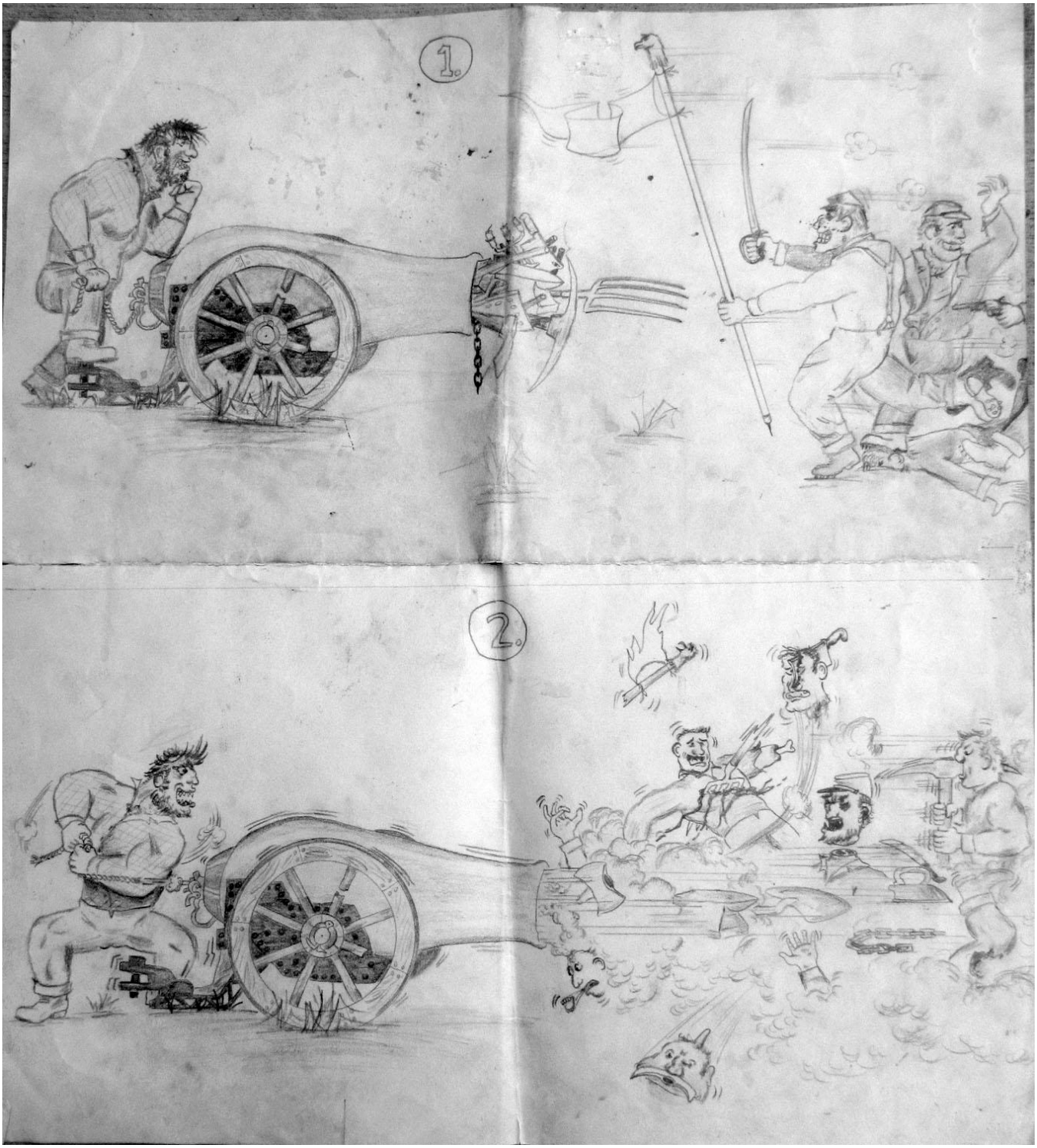
8. *Violencia e Brutalidad*. The "hero" has a cigarette holder, steel knee spikes, and notched gun handles that combine class with crunch.

9. This is my "eggshell" drawing. The "hero" has gorilla features and enjoys crushing eggs.

10. I drew this in college at the South Dakota School of Mines and Technology when television "Westerns" were popular. From left to right, these "heroes" are Matt Dillon (James Arness) in *Gunsmoke*, Lucas McCain (Chuck Connors) in *The Rifleman*, Cheyenne Body (Clint Walker) in *Cheyenne*, John Wayne as John Wayne, and Seth Adams (Ward Bond) in *Wagon Train*.

11. My drawing of John Wayne as "Ethan Edwards" after I saw the 1956 John Ford movie, *The Searchers*, in Rapid City.

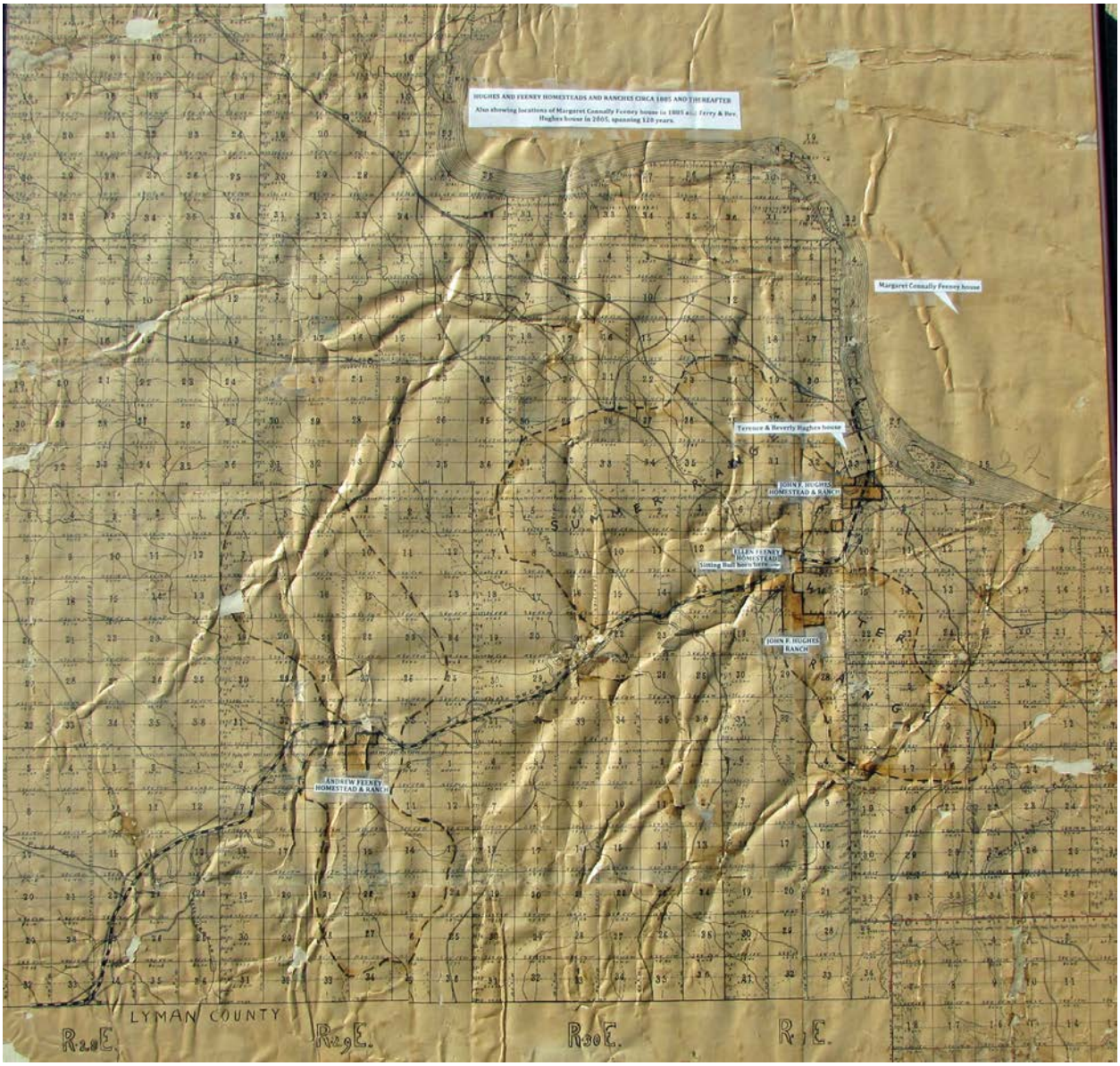
12. I drew this when I was a graduate student at Northwestern University. Fellow graduate students thought the "bully" was me and the "victim" was my advisor, John Brittain.



Drawings Sheet 2.

I call this “Pickett’s Charge” during the Battle of Gettysburg. My drawing is in two parts, before and after the cannon is fired. I was in either high school or college when I drew it. The Confederates wear hob-nailed boots. Cannons firing grapeshot did as much carnage as my drawing shows.

Aerial photo of Fort Pierre and Hughes ranch in Bad River valley in 1956. See the "dog" made by the bends in Bad River. Pierre, the state capital, is across the Missouri River before it was dammed.



Map of Hughes and Feeney homestead ranches in Bad River Valley south of Fort Pierre in 1910.

CHAPTER 2 - EDUCATION

From boyhood, I had a yen for travel. The global hemispheres for Chapter 2 show as red lines my major travels worldwide over 40 years. Along with a formal education, I was educated by traveling.

Gird up your loins now, like a man; I will question you, and you tell me the answers! Job 38:3

Even though Paw never made more than $2600 per year as a county judge, he always managed to take us on a summer vacation, usually to the Black Hills. In the northern Hills, Sturgis had the Passion Play in an outdoor theater, with live actors depicting Christ, His apostles, and accusers, and Deadwood had the Trial of Jack McCall, which re-enacted his shooting of Wild Bill Hickok and the resulting trial. In the central Hills, we would always see Mount Rushmore, take the hairpin turns on the Needles Highway, and see the latest progress in converting Thunderhead Mountain into Crazy Horse on horseback. In the southern Hills, we would visit the buffalo herds and prairie dog towns in Wind Cave National Park, and go to Hot Springs to swim in Evans Plunge. It was a big indoor swimming pool fed by warm mineral springs. It had a high water slide, a long Tarzan rope, and metal rings hanging on chains so we could swing from ring to ring across the pool. There were also a lot of crystal caverns, lakes, and campgrounds. Because of the trees and altitude, summers in the Hills were refreshingly cool.

Rapid City is the eastern gateway to the Black Hills and the home of the South Dakota School of Mines and Technology, which was called the School of Mines or just Mines when I was a boy. Now it's called Tech. We often stopped there on our way to the Hills because it had a superb geological museum that included several reassembled dinosaur skeletons, often using the bones of dinosaurs discovered in the Badlands. As Leo and I got closer to graduating from high school, it was natural for us to think of Mines as a place to go for college. He enrolled in l954 and I enrolled in l956. I had a Dan Dugan Scholarship which paid the astronomical tuition of $90 per year. I don't think there was a better education for the price

in the country.

In my four years at Mines, I washed pots and pans in the cafeteria kitchen of Connolly Hall, which was also where I had my dormitory room. College kids always complain of dorm food. One day the garbage man showed up and Marvin "Mick" McMasters, another student who worked with me in the kitchen, yelled to him, "Elsie says to leave two cans!" Elsie, the head cook, was not amused. The pastry cook was Jessie. She powdered her face so heavily it was like a mask, and flakes from it kept dropping onto her cakes and pies. We never knew whether we were eating her flakes or her frosting when she served cupcakes. Leo worked in the personnel office of the O'Harra Building where the administration was located. We both needed summer jobs as well to stay in college. We had construction jobs on the Oahe Dam in l957, at the end of my freshman year.

At the end of my sophomore year in l958, when I was twenty, I had a summer job on the Fort Pierre section of the railroad. The section boss was Marvin Hewlett. He lived in Canning, which was east of Pierre. He was a tall beefy man with maybe the bluest eyes I have ever seen. The other section hands were Ivan Shiflet, Dial Davis, and Claire Johnson. All had many years of seniority. Ivan had managed the Hughes ranch before Paw sold it. Claire performed as a rope twirler at the Fort Pierre rodeos. He looked young and slim from the grandstands, but close-up I discovered he was toothless and wrinkled. For some weeks, we worked where the Fort Pierre section ended and the Wendte section began, and on those days men from the two sections worked together on the tracks. Each crew had a section "put-put" car that took them to the work sites and had a barrel of drinking water. One particularly hot day, I was working with men from the Wendte section and their section car was closer than ours, so I went to theirs when I needed a drink of water. Everyone was drinking more than usual, so water in their barrel was getting pretty low. It was also getting more oily and bad-tasting. Toward the end of the day, I dipped into the barrel and when I pulled it out a dead decomposing bat was in the dipper. We always emptied our barrel at the end of each day and filled it with fresh water the next morning. The Wendte crew never emptied theirs, they just filled it every day, so there was no telling how long that dead bat had been in their water barrel.

At the end of my junior year in l959, after I turned twenty one, Leo and I worked together again on the Oahe Dam. This time we were on the "swing shift" from 4 PM to midnight, instead of the "graveyard shift" from midnight to 8 AM that we had worked in l957. We operated big piston-driven tamping machines that packed each layer of dirt that was laid down by the Turnapull dirt-hauling rigs. That was the last time we worked together, and the last summer I spent in the Big House. A big chapter of my life was coming to a close. Leo and I graduated together the next year, and went our separate ways. He went to Oregon to work as an engineer for the US Forest Service. I went to Illinois to begin graduate school at Northwestern University, and to leave eight years later to begin a career as a glaciologist who specialized in the big continental ice sheets of the kind that once covered all of Canada and ended at the Missouri River in South Dakota.

As I did after the graveyard shift, I took a morning swim in Bad River after the swing shift. I went down to Bad River behind the Big House on Hughes Hill and dove into my favorite swimming hole from the top of the shale cliff on the outside bend in the river. After my swim, I stretched out on the low sandy inside bend to dry in the morning sun. One day I took my Kodak box camera and used a string to trip the shutter. In the photographs, my abdomen is still sunken from my ribcage to my pubic arch, as it always had been through my teenage years. I still had my "blades" (sharp iliac crests). But now I had muscular development and weighed 165 pounds. Two summers earlier, when I was 19, and realized my mother was dying, I became anorexic and my weight dropped from 150 pounds at 18 to below 120 pounds. I was stunned, so I began eating more and my weight had climbed to 135 pounds when I returned to Mines that

fall and weighed in to join the football team. Before long I was back to 150 pounds. My waistline mirrored my weight, 24 inches at 120 pounds, 26 inches at 135, 28 inches at 150, and 30 inches at 165. My body matured from adolescence to manhood in one year after the photos (the only ones of that kind, which I destroyed), attaining the normal weight of 200 pounds for my height, and adding 25 pounds more by the time I graduated in the spring of 1960.

Weight gains accompanied a hearty appetite as I was maturing physically. Most added weight was muscle, but not by weight-lifting at the gymnasium. That was a waste of time, having no useful purpose. By then I had a close friend, Jim Patraw, who lifted weights religiously. I became as muscular as Jim anyway. We both stretched cables. Even skinny, I was naturally strong. Jim kept a barbell loaded to 120 pounds in his room, and I could hoist it over my head as easily as Jim, I just couldn't do as many repetitions. As with weight lifting, body building didn't appeal to me. Bodies bulging with muscles weren't natural. I never wanted to look like that.

I preferred the slim body I had as an adolescent. It was natural and carried no excess baggage, spare muscles and no fat. Yes, there were advantages to being big and strong as an adult, especially in the strenuous work I did in the field as a glaciologist, or in confrontations with policemen when I became actively anti-abortion, activities described at some length later in this autobiography. I had been a Peter Pan who resisted adulthood, preferring to remain a carefree youth living in the Garden of Eden before sin entered the world. My rapid maturity was not just physical. Peter Pan was a boy's boy and so was I. Girls weren't in my fantasy world of comic book heroes. Batman, Superman, Captain Marvel, and the Green Hornet all had a boyish youth as a sidekick in fighting evil. As an altar boy, I mumbled my Latin responses at Mass without really learning them and what they meant. At the School of Mines, I began taking my Catholic Faith seriously, leading to a reduction in drawing gruesome pictures. At first, Mines seemed to be a young man's world not so different from a boy's world, with cigarettes and booze added (and I avoided). The real adult students were Korean War vets on the GI Bill of Rights and often married. I became a more serious student, especially in the last two years. Mines converted boys into men. Peter Pan with his lost boys, pirates, and Indians in Neverland were left behind. Yet, part of Peter Pan remained in me.

I cannot resist telling two more stories from those long-gone boyhood days. A carnival came to Pierre every year as part of the annual frontier days celebration. Attractions at the carnival ranged from, one year, paying a quarter to see "Anna Mae Miller, the Girl in the Iron Lung" to, another year, paying 50 cents to see the "second act" of hoochie koochie girls. Anna Mae Miller was paralyzed by polio. In those days polio was a scourge. Seeing her, and thinking I may have to spend the rest of my life in an Iron Lung that forced me to breathe, was terrifying.

The hoochie koochie girls were something else. They wore scanty costumes and pranced on a stage outside the tent. A dollar admitted people over eighteen into the tent to see their act. When I qualified, I paid my buck and went inside. The girls danced around while they peeled off their costumes down to a G-string and pasties. They then disappeared through a partition in the tent and the carnival barker told us that we could see the rest of the show for 50 cents more. I thought this would be my first chance to see naked women, so I paid up and went in. Nail kegs were placed in a circle around the tent walls, and each of us picked one and sat down. One of the girls then came in and started her dance. Pretty soon the G-string and pasties were off. One spectator was smoking a cigar. The dancer swiveled up to him, snatched it from his mouth and stuck it in her twat. Then she gyrated around in the circle with the cigar smoke curling up from her groin. When she passed the man again, she pulled out the cigar and stuck it back in his mouth. He took a long draw. Now Bill Clinton has moved that act to the White House. One

cowboy in the audience kept heckling the girl, so she danced by him, pulled off his Stetson, put it between her legs, and filled it to the brim with warm frothing piss. She hoisted the hat over her head and danced around in the ring with some piss sloshing over the brim. Then she upended the hat onto the cowboy's head. That put an end to his heckling. Nobody who left that tent could say he didn't get his 50 cents' worth.

Although I couldn't know it at the time, my first step toward a career in glaciology was taken during my first week at the School of Mines. It was orientation week for incoming freshmen. On one day, we were all herded into the gymnasium, where folding chairs had been set up, and the chairman of each engineering department came onto the stage to give undecided freshmen like me the pitch for his branch of engineering. Paul Anderson, the head of the metallurgical engineering department, came out and said, "I'm only going to say two things. First, metallurgists are the highest-paid engineers." That got our attention immediately. "Second, I'm going to tell you the secret of Damascus steel." My ears perked up. Anyone who has read stories from the *Arabian Nights* or *The Talisman* knows the fabulous properties of Damascus steel. For example, when Richard the Lion Hearted met Saladin during the Third Crusade, he tried to impress Saladin by drawing his broadsword and, grasping its handle with both hands, cleaving a tree in two with one swing. Saladin nodded to one of his eunuchs, who brought a silk scarf on a pillow. Saladin motioned him to toss the scarf into the air. As it was drifting down, Saladin drew his scimitar and sliced it to ribbons. Anderson told us the secret was in the quench. The red-hot blade was taken from the forge and held until it matched the color of the setting sun. Then the blade was quenched in the belly of a Nubian slave. I suppose that's why Saladin's empire eventually collapsed. He ran out of Nubian slaves. Recalling all the gruesome pictures I had drawn as a boy, I enrolled in the metallurgy department at once.

The metallurgy department was housed in the second-oldest building on campus (the oldest building housed the mining department). Metallurgy had only two faculty members. We called Anderson "the sandman" because his slow western drawl put us to sleep in his classes. Alex McHugh was "the snowman" because he piled on too much too fast for some students to learn. They had a poem about him:

The Snowman

I know an awful lot about a lot of things.
But I'll be damned if I'll tell you.
I'll snow your ass in every class.
My name is Alexander E. McHugh.

Anderson was about six feet, slender, and youthful looking, with a ruddy complexion and crew-cut sandy hair. He dressed casually but with a certain consciousness of appearance. McHugh was big, rugged, and rumpled. Anderson specialized in physical metallurgy, the physical laws that give metals their properties. McHugh specialized in process metallurgy, the engineering techniques for refining metals and forming them into various commercial shapes. While I was there, they added Ray Beebe to the faculty. He was short and rather dapper, and specialized in extractive metallurgy (also called mineral dressing), the art of enriching metallic minerals in ore-bearing rocks and then extracting the metals from their ores. Only the mining engineering department was smaller than the metallurgy department. It had one faculty member, the department head.

Calculations in "Mac" McHugh's classroom and laboratory courses were made using mechanical calculators that not only did addition, subtraction, multiplication, and division, but also calculated trigonometric functions, natural and common logarithms, and exponential functions. All done by typing

in numbers on a keyboard and turning a hand-crank, with answers appearing on a row of wheels having numbers from zero to nine like on the old gasoline pumps. It boggles my mind to think how all those things could be accomplished by gears and levers inside a machine the size of a typewriter. Now a hand-held electronic calculator can do all that and more, but I still marvel at the knowledge, now probably lost, that enabled all that to be done mechanically. Can one of those old mechanical calculators even be found in a museum today? Who could ever make one, with no instructions?

I still remember my metallurgy classmates. Ed Bane was our smartest. Tom Gorder was our most athletic. Jim Hancock was our shortest. Doug Olson was our tallest. Ken Heidinger was our most good-natured. Most were in the Triangle Fraternity. Leo was in Theta Tau Fraternity. I never joined a fraternity. We had two Korean War veterans, named McCormick and Hayes, both married (I've forgotten their first names).

Every metallurgy student had to take the basic courses in the other engineering departments, plus the usual math and physics courses. One of the showcase faculty members was John W. Willard in the physics department, housed in the McLaury Building. He got his BS, MS, and PhD degrees from Princeton, and his most notable contribution was arranging elements in the Periodic Table in a way that emphasized their atomic structure more than their physical properties. He had written a textbook that taught physical chemistry from this perspective. He lived in a canyon outside of Rapid City. One day when his son's music teacher was leaving after giving him the weekly piano lesson, the boy picked her off with a rifle from an upstairs window, killing her. Doc. Willard's aura was never the same after that.

The head of the geological engineering department, Ed Tullis, liked to sprinkle his lectures with stories. One became famous. Here it is.

The Saga of Powerful Katrinka

When Ed Tullis was a graduate student working on his doctoral dissertation in the Badlands of South Dakota, he and two fellow students found an invitation in their mailbox to have supper at a ranch in the Badlands, with a map showing how to get there. They drove to the place in their jeep, but when they arrived they were unable to open the gate to the fence that enclosed the yard around the ranch house. The fence was of barbed wire, and the gate was merely one section of fence that had a grounded fence post at one end and a floating fence post at the other end. Loops of wire at the top and bottom attached the floating post to a grounded post next to it. This is a common gate in barbed wire fences. The fence was stretched too tight to move the floating post enough to take the wire loops off so the wire gate could be opened.

The door to the ranch house opened shortly, a gigantic woman standing six-foot-four-inches and weighing well over 300 pounds came out onto the porch, planted her fists on her hips, sized up the situation, and strode toward the gate. Tullis emphasized that she strode, she never walked. She grabbed the floating post in one ham-like hand, the grounded post in the other, yelled "Hee-yah!" and banged the two posts together. The wire loops flew off by themselves. "Come on in!" she announced. Tullis emphasized that she never said anything, she announced things.

As they approached the house, the front door opened again and a little man came out. "I'm Powerful Katrinka and this is me husband, Henry!" she announced. Chickens wandered about in the yard. "Time to rustle-up grub!" Katrinka ran down one of the chickens and, when she got it cornered, she scooped it up, grabbed its head in one ham hand and its body in the other. "Hee-yah!" She gave a yank and pitched the head to one side and the body to the other side. When the headless chicken stopped

running around and collapsed, Henry picked it up and took it inside. “Let’s go inside!” announced Powerful Katrinka. “Henry does all the cookin’ and housework around here. *I run the ranch!*”

When Henry said supper was ready, they went into the dining room and sat down at table. Powerful Katrinka sat at the head of the table holding a butcher knife and serving fork, with a stack of plates in front of her. Henry brought the chicken in on a platter and set it down between her and the plates. She brought the butcher knife down smartly on the chicken’s breast, the two halves fell away to each side, and the guts rolled out. “Hee-yah! Fergot to gut it. Don’t make no never mind, tastes as good one way as does t’other!” Then she jabbed in the fork, carved away sections, plopped them onto the plates, and Henry passed the servings to each guest. At one point, Powerful Katrinka left the room for some reason and some of the guests took the opportunity to pitch their portions out the window, hoping the chickens outside wouldn’t come running and squawking.

After supper, everyone retired to the parlor to make small talk. Powerful Katrinka and Henry sat side-by-side on a loveseat. At one point in the conversation, Powerful Katrinka nodded down toward Henry and announced, “Sometimes me husband gets a little uppity. But I make him come to time!”

Tullis said that some years later he was in that part of the Badlands again and decided to pay a visit. Powerful Katrinka was still there, but Henry was gone. Tullis didn’t want to ask, but he surmised Henry finally found a way to get that gate open. Or maybe Henry got “uppity” once too often, Powerful Katrinka scooped him up with one hand, grabbed his head, and…. “Hee-yah!”

Leo and Jim Patraw, a student from Rice Lake, Wisconsin, were classmates in the department of geological engineering. Jim was tall, with blue eyes and blond hair. He and I became good friends. He was the fellow in the *Charles Atlas* cartoon advertisements in the comic books of those days. Panel by panel it shows a skinny “97-pound weakling” taking his girlfriend to the beach, they lie down on a beach blanket, a beefy bully comes along and kicks sand in the skinny youth’s face, the skinny kid goes home and looks at his skinny body in a mirror, he cuts out the ad in the comic book that promises a body like Charles Atlas, the postman delivers a big package, the skinny kid starts exercising, he takes his girl back to the beach when he looks like Charles Atlas, the bully comes along, the kid punches him out, his girl says “My hero!” and onlookers say “What a man!”

By the time I knew Jim, he had accomplished the transformation but he showed me some “before” pictures. He saw me draw pictures and started drawing also. He became very good, winning prizes at fairs in Wisconsin for some of his drawings. He also started stage acting, and was good at that. He went on to be a founder of the Hardscrabble Players at the Red Barn Theater in Rice Lake. He began playing stringed instruments, and by the time he graduated from Mines he could play them all. He won the heavyweight weight-lifting championship of South Dakota when he was sick with the flu. He could mimic the voice of just about any actor or other personality. He put together impressive collections of all kinds of things. But he never practiced geological engineering after he graduated in l960 with Leo and me. He was content to be an adjunct geology teacher at the community college in Rice Lake, which was a two-year campus of the University of Wisconsin system. He never married. Instead, he lived with his parents and cared for them in their old age. He dropped dead in the weight room on campus from a heart attack. His parents outlived him. I mention all this because Jim Patraw was a good friend, like a brother, and somewhere the accomplishments of this latter-day Renaissance Man should be listed.

I remember one of Jim’s stage performances in particular. He was playing the Clarence Darrow

character in the play, *Inherit the Wind*, that was performed by student actors at the School of Mines. At the trial, Jim had entered Darwin's *Origin of Species* as one of his exhibits, after the student playing the William Jennings Bryan character had entered the *Bible* as an exhibit. After the trial, when everyone had left the courtroom but Jim, he looked at the two books still lying on the table for exhibits. He walked over to the table, picked up each book, placed them side by side in his hand, and walked slowly, but with big strides, to the stage exit. That wasn't in the script. Jim added it, and it was pure James Mark Patrick Patraw. It's what made him special.

Jim and I were soul mates in lots of ways. The epic John Ford western, *The Searchers*, came out in l956 and we agreed it was John Wayne's greatest performance. That was the year I entered Mines and when our friendship began. On Sundays we took the mile walk to Mass at the cathedral. It wasn't far from my Aunt Irene's house, but she had moved to St. Paul after the Virginia Colonel she married died. Jim's mother was feisty, blonde, Irish, and named Irene. Bill, Jim's father, was gentle, kind, and French (Patraw was originally Patreaux). There were also Germans on both sides and Poles on his mother's side. Jim inherited his mother's looks and his father's disposition, the best of both. After we graduated, Jim stayed at Mines for a Master of Science degree and spent two years at the Colorado School of Mines working on a doctorate. He left to teach geology at St. Thomas College in St. Paul for a few years, and then returned to live with his parents in Rice Lake, where he taught geology at the Barron County campus of the University of Wisconsin System. He attended my Ohio wedding in 1974. In 1996 he dropped dead while working out in the college gym. He was 59.

Years later, a friend of Jim sent me pages from a diary Jim kept. In it he wrote in several places he didn't think he would live much longer, but he never wrote anything about his state of health. He wrote about his travels and hiking, vigorous activities. He had a girlfriend next door in Rice Lake, but she got scant mention in the diary pages I read. Irene Patraw never accepted Jim's death. I visited the Patraws a few times after that, and Irene talked as if Jim were still there.

Mines usually had some Norwegian students, but in South Dakota they wouldn't seem foreign. There were some unusual types in my class. The only "real" foreign student was Ishthal Bhathal from India (we called him Dishtowel Bathtowel). The most blond student was an albino Negro who had to wear dark glasses to protect his pink eyes. We had one woman, Carolyn Mohn. "Mick" McMaster had one blue eye and one brown eye. They both majored in chemistry, not engineering. That's diversity.

I had two roommates in Connolly Hall, but they didn't graduate. The first was small and thin. Toward the end he started to come in late, after I was asleep, and would be lying naked on his bed the next morning. I suspected he had started drinking, but never asked. A lot of Mines students drank too much. Leo had that problem, but overcame it. The second, Stacy Unruh, was chubby and good-natured, which was an asset for living with me. One day when I had to go downtown in a hurry, the door to our room was locked and I didn't have the key. Stacy wasn't in the room so I reared back and charged into the door. The whole door and its frame came out of the wall and landed on the floor of our room, so the entrance to the room looked like the entrance to a cave. I grabbed my key inside and took off. When I got back, Stacy was sitting on top of the door and door-frame, with chunks of plaster everywhere, looking at me with a quizzical smile.

The metallurgical engineering department conducted field trips for junior and senior students. One was to the Homestake gold mine in Lead, which was about a mile from Deadwood in the northern Black Hills. It was then the world's largest gold mine. We saw all the operations from mining ore to casting gold ingots. On display was one ingot with a sign that said you could have it if you could lift it,

but it had sloping sides and such a smooth polish that nobody could get a grip on it. The most memorable field trip was to Utah to see the Bingham open-pit copper mine and to visit a steel plant. At the time, the Bingham mine was the largest in the world. The steam shovels and dump trucks were gigantic, but the ones at the bottom of the pit looked like toys. When we got to the steel plant, the foreman on the floor was about to direct the blowing operation for the row of Bessemer converters. They are huge pear-shaped vessels that are open at one end and are mounted on trunnions, about which they can rotate through an angle of l20 degrees. They are used to convert pig iron into steel. About 25 tons of molten pig iron are poured from a giant crane-mounted ladle into the open end of the vessel when it is in the horizontal position. Then compressed air is blown through tuyeres at the other end while the vessel is rotated to 30 degrees past vertical. This oxidizes many of the impurities in pig iron and converts it into steel. The oxidized impurities shoot out from the open end as a sheet of flame that changes from yellowish red to bluish during the "blow" of about 20 minutes. Then the vessel is rotated back l20 degrees to its original horizontal position and the molten steel is poured into ingots. The flames shoot out for about 8 minutes and the whole process takes about 25 minutes.

The plant managers had arranged a "blow" to take place during our visit. We were taken to a steel walkway along one wall high above the plant floor. A row of about ten Bessemer converters along the opposite wall were being loaded with molten pig iron. The building was cavernous and dark. The burly foreman on the floor was at the far end of the building. Then he began walking briskly to the near end. He pointed to each Bessemer converter as he walked past it, so that they all began to rotate upward in succession, like fallen dominoes becoming upright, each one belching flames in turn. They were like a line of gigantic cannons tipping toward us and firing a broadside. The roar was like a series of thunderclaps. White-hot sparks flew everywhere. The columns of flame shot halfway across the enormous room. The colors of the belching flames passed through the whole rainbow spectrum, the inside of the building lit up like high noon, and the black shadows of steel ladders and walkways danced on the walls, ceiling, and floor. It was the most awesome sight I had ever seen, and I thought the floor foreman had the most magnificent job imaginable. The Open Hearth method was replacing the Bessemer method for making steel even then. I don't know if it is even possible to see that indescribable sight anywhere on Earth today.

While driving through the Black Hills on our return from one field trip early in the spring, we witnessed the head-on collision of a pickup truck and a car on the icy highway. We stopped to give whatever assistance we could. The two in the pickup were not seriously hurt, but everyone in the car seemed to be either dead or dying, including two small children. The woman next to the driver had crashed through the windshield. The driver was crumpled over the steering wheel and blood dripping from his nose had formed a long bloodsickle. His chest was rising and falling but his lungs rattled and bubbles of blood burst at his mouth. His breathing became tortured gasps that got weaker and farther apart. Then they stopped. He died before our eyes. The car was so twisted that we could not open any of the doors. When the state troopers arrived we made our report and left.

I don't remember if that was the same field trip that included the "blow" at the steel factory. In any case I had seen fire and ice, fire that brought to life a room that was dark as death and ice that closed the cold hand of death around a family that minutes earlier had been full of life.

Homecoming Day at the School of Mines consisted of the traditional football game on O'Harra Field, whitewashing the giant M on the side of Cowboy Hill overlooking Rapid City and the Mines campus, and engaging in a drunken brawl with Miners rolling down the hill in various stages of consciousness. Mines was a very masculine school in the macho sense, but there was a move to start

calling it Tech in our last year there, to give it a more refined and forward-looking image. Leo wrote a letter for the student newspaper, *The Hardrock*, poking fun at the change, saying they would have to replace the M with a T on Cowboy Hill, and have tea parties, with students holding teacups between their thumb and forefinger, with their pinky finger sticking out. The year that we graduated, l960, was the diamond jubilee for Mines. Our yearbook was called *The Engineer*. In the l960 yearbook, George O'Clock, a student in his junior year, wrote a long history of the school, beginning with the Custer expedition that opened up the Black Hills in l874, with mining becoming an important economic development, dedication of the South Dakota School of Mines in l885, its growth since then, and the name change to the South Dakota School of Mines and Technology when other branches of engineering became more important than mining and metallurgical engineering. It was a nostalgic look back, but maybe it was time for a change. When I visited in 2014, "Mines" seemed to be replacing "Tech". Good!

I must mention three people whom I will always associate with the best of the School of Mines. Guy March, his wife Gail, and Paul Anderson. Guy was head of the mathematics department when I was there. Gail and Guy were known as "Mom" and "Pop" by the students. They were there long before I arrived and remained long after I departed. Many a student with low grades or with financial problems walked into "Pop" March's office thinking of dropping out and walked out with lifted spirits and went on to graduate. "Pop" helped getting Leo back into Mines after Leo was kicked out in his sophomore year because of carousing and poor grades (that was the year Maw died). In l959, Paul Anderson and others succeeded in getting Legislative approval for a new Mineral Industries Building that would house the mining, metallurgical, and geological engineering departments. A few years later, Paul resigned his tenured full professorship, and he began new careers that included participation in the negotiations between the FBI and members of the American Indian Movement that peacefully ended an armed standoff on the Rosebud Indian Reservation at the site of the Wounded Knee Massacre in l890. I kept in touch with Paul until he died. He told me that on one occasion he returned to the School of Mines during Homecoming. While attending a smoker, he said he found himself looking at the faculty members he had known for so many years and thinking, "Here they are, living each day so much like the one before that they may as well be living their whole life in a single day. I was just like that and counting myself fortunate for having that life. Since then the whole world has opened up to me and I've had several lives packed into one." I never forgot that. Keeping myself free to pursue new opportunities and ideas has been a guiding principle in my own life, and it has enriched me more than I can say.

I went out for football in my sophomore year. Games were played on O'Harra Field. It was unique. Fans sat in bleachers on one side, and in their cars on the other side, which was a hillside terraced for parking. We didn't win many games. Even the team from Rapid City High School beat us. Our biggest player was Barry Bradshaw, well over six feet tall and three hundred pounds. He and Leo were good friends, and remained so after they both graduated.

During my senior year at Mines a chicken came home to roost. During my first two years, I was enrolled in the Reserve Officers' Training Corps (ROTC) on campus, as was every freshman and sophomore. Upperclassmen who stayed in ROTC were squad leaders who marched us around the racetrack that surrounded the football field. On one occasion, one of these guys marched my squad through a mud puddle and then gave us demerits for having muddy shoes. Demerits could be worked off, but if they weren't a cadet's grade could be lowered. I refused to work off any demerits after the mud puddle incident. ROTC courses were considered to be an easy A, but I got a D in ROTC that semester. That low grade kept me from graduating with honors in my senior year. Would I have worked off the demerits if I knew that would be the outcome? I doubt it.

Representatives of companies were on campus looking to hire seniors. I wasn't getting any offers, so I applied to graduate school at the Montana School of Mines and Northwestern University, and was accepted by both on scholarships. Just four years earlier, in l956, Northwestern had started a new Department of Materials Science, the first in the country. It was founded by a small group of metallurgists and physicists who realized that the same physical laws applied to all crystalline materials, notably metals, ceramics, and polymers. The philosophy of this new department was to teach these underlying principles, and then to apply them to each category of materials, with individual professors specializing in certain materials. That appealed to me. Under Paul Anderson's influence, I had become interested in physical metallurgy, which was much more fundamental than extractive and process metallurgy. Also, materials science promised to broaden my horizons as an aspiring scientist.

It could have been a very near horizon. In the fall quarter of my first year at Northwestern, I enrolled in a three-quarter required course in the mathematics department and flunked the first quarter. The text was *Mathematics of Physics and Modern Engineering*, by Sokolnikoff and Redheffer. It was 8l2 pages long and we went through the whole book in nine months. The instructor during the fall quarter was a Jew named Brownstein. He had curly black hair and looked like a little pudgy teddy bear. He gave no homework problems and had only two examinations, a midterm and a final, so I got lazy. The midterm exam had only two problems. I got about l8 percent in the first one and about 24 percent in the second one. Then I stopped goofing off and got 86 percent in the final exam. At the end of the quarter I went to Brownstein's office to see what my grade was. He didn't want to look at me. Looking at his desk, he said that if I had been a senior I would get a D, but graduate students don't get that grade, so he had to give me either a C or an F. He said a C would be unfair to all those who got a D but an F would be unfair only to me, so to be unfair to the fewest number he was giving me the F. "I can't argue with logic like that," I replied, and walked out. When the grades were turned in to the new chairman of the Materials Science Department, Donald Whitmore, he called me into his office and told me that I would not repeat the fall-quarter course, but I would have to get an A in the winter and spring quarters of the three-quarter course if I were to remain in graduate school. I had a very good instructor for those two quarters, a short dapper Greek named Nicholas Boukides. He wore dark striped suits that made him look like a Chicago gangster. He gave lots of exams so I studied a lot more. He gave me an A for each quarter. Thanks, Nick.

I never regretted the F. Getting two As after the F in the same course sequence showed I could survive adversity. That's more important than three As.

At the end of the fall quarter, I went back to South Dakota to spend Christmas in the Big House with Paw and Tim. Snow was on the ground when I got off the bus in Evanston to begin the winter quarter at Northwestern. I had someone take a photograph of that auspicious event. I was the very image of a country hick making his Big Time debut. Evanston is upscale, hoity toity, and the first suburb of Chicago on the north shore of Lake Michigan. Each morning, multimillionaire tycoons in their chauffeured limousines come down Sheridan Road from their secluded estates further north and pass Northwestern on the way to their corporate offices atop skyscrapers in the Loop of downtown Chicago. In the photograph, I look like I weigh about 240 pounds, I'm wearing cowboy boots, a straw cowboy hat, a scarf, a plaid wool shirt, and Paw's knee-length greatcoat with its enormous fur collar. I'm carrying my leather suitcase, my banjo, and a full shopping bag. All that was missing was a stalk of wheat clamped in my teeth. A sign above me says ONE WAY, with an arrow pointing to the left, and City of Evanston in small letters under the arrow.

The Materials Science Department accepted only graduate students. It occupied rooms that faced Sheridan Road on the first two floors of The Technological Institute. It was easily the largest building on

campus, and was built with $50 million provided by Colonel Robert McCormick, one of Northwestern's richest benefactors, founder publisher of the *Chicago Tribune*. I seem to recall he was also president of the Chicago and Northwestern Railroad, which had given me summer jobs in South Dakota. The Technological Institute was built around a central courtyard, and had several wings, each of which housed one of the engineering departments on campus. After I left, the Materials Science Department got its own building and became the Department of Materials Science and Engineering, accepting undergraduate as well as graduate students.

The first chairman of the Materials Science Department was Morris E. Fine, whose reputation as a scientist was surpassed only by his stature as a human being. "Morrie" Fine still headed the department when I arrived. Morrie was slender with thinning dark hair, kind brown eyes, and a quiet manner that put everyone at ease. He told me he made the decision to accept my application. A "cowboy" from South Dakota may have seemed like a good way to make his department more inclusive. If he had doubts when he first met me, he kept them to himself.

The most recent faculty addition was Johannes Weertman, of equal scientific reputation and noble character. Hans launched me on my career in glaciology when I left Northwestern in l968. My graduate advisor was John O. Brittain, a mechanical metallurgist who got his doctorate at Penn State University, where the chairman of the metallurgy department in l968 was Frank Aplan. Frank grew up in Fort Pierre and had graduated from the South Dakota School of Mines and Technology. He was a cousin of Karl and Bill Fischer, my boyhood friends.

It's worth introducing the "cast of characters" who were graduate students under JOB (as we called John Brittain). Bob Carnahan was our senior. He had been in the Navy and industry before entering graduate school at Northwestern at the time the Materials Science Department was founded, so he was the first of us to leave with his doctorate. Bob had an Irish Protestant heritage, but without the bigotry of the MacMurrays on my father's side. He was married with three young kids (later four). Gene Lautenschlager was a Chicagoan, also with experience in industry. Bob and Gene were the most serious students, as was Franz Felberbauer from Austria. The rest of us were more or less along for the ride. Ray Adsit was married with five kids. Jim Rechtien was single and, with Gene, remained at Northwestern to pursue careers in biological materials in its department of dentistry, founded by another materials science alumnus. We all became good friends, but Ray came across as a hillbilly and he never quite fit in. A year or two after I arrived, the Materials Science Department moved to the Lake Michigan side of the Technological Institute. JOB took on several more graduate students, Floyd Myers, Bill Marshall, Dave Kiewit, Teruaki "Terri" Aoki from Japan, and Astrid Norlin from Sweden. We were an average looking bunch. Floyd and I were tallest (he was thin and I was thick). Bill and Terri were shortest. Ray, Floyd, Dave, and Astrid (we called her "Astro") were blonds. Bob and I had black hair and blue eyes. Gene, Floyd, Bill, and Dave got married while I was there, Gene to Pat (one daughter) Floyd to Marge (one daughter), Bill to Sally (two sons), and Dave to Shelly (a "liberated" Jewess who gave him a child fathered by a Black man—after they were married). All had great success upon leaving Northwestern, especially Terri when he returned to Japan. Bob, Jim, and I liked going to the Northwestern football games at Dyke Stadium (no link to lesbian bull diesel dykes).

I was initially supported by a Walter P. Murphy Fellowship, but Dr. Brittain was conducting research supported by Advanced Research Projects Agency (ARPA) grants that eventually funded my master's and doctoral research. Among his first graduate students, Bob, Jim, Gene, and I kept in touch, until Gene died in 2008. I re-established contact with Franz after he returned to Austria. Ray invited me to a spaghetti dinner once. His five kids were amazed when I ate all the spaghetti in the big bowl after

everyone else had eaten their fill. Ray later told me that that much spaghetti would have fed his family for a week. I suppose I should have been ashamed of myself. They never invited me back. Ray was suspicious of Catholics so we never quite connected. He called us "mackerel snappers" because Friday was fish day for us back then. In the last decade, I've established e-mail contact with Floyd and Marge, Bill and Sally, and Dave and Shelly.

Dr. Brittain's boyish-looking Austrian graduate student, Franz Felberbauer, was an interesting study. He went on to become a general in the Austrian army. Franz had light brown eyes and hair, a thin face, and a slight build; features that he described as being "pretty pure Nordic." Except on cold winter days, Franz wore brown sandals, white turned-down anklets, Navy blue pleated short pants cuffed at the crotch, and a white shirt with sleeves rolled up past his elbows. Franz had a smooth body and maybe didn't even shave. If he had worn a red neckerchief he could have been a poster boy for the Hitler Youth. He seemed to identify more with Germany than Austria. He was 22 and had an adolescent admiration for German military might in both World Wars. On Tuesdays, men could swim naked in the indoor pool at Northwestern. Franz liked that and I would join him. While walking there on one occasion, he was explaining to me that Germany lost both wars because of betrayal, and that wouldn't happen the next time. I told him the next time we would plow Germany up and sow the furrows with salt, like the Romans did to Carthage to end the Punic Wars. That ended our conversation. I visited Franz in Austria years later. He had married a non-Aryan Magyar from Hungary, they had two boys (later three), and his thin youthful body was history. We still keep in touch by e-mail.

Jim, Franz, and I were Catholics, so we attended Mass at the Newman Center, which was a short walk from The Technological Institute. The priest there was much liked by students. His name was Cornelius MacGillicuddy, like the baseball legend, Connie Mack. He had twinkling blue eyes, sandy hair, a big frame, and was very tall, about six-foot-eight. That was where we met more typical Northwestern students. They weren't engineering majors, they usually came from families with money, and many were more interested in partying than in education. Being mostly undergraduates, they were usually a few years younger than we were. Engineering students usually came from working-class backgrounds, so there wasn't much chance that one of the girls would look at us as marriage prospects. Nonetheless, it was at the Newman Center where I met the first girl I fell in love with, or thought I had.

Her name was Carolyn Byrne, she was a blue-eyed blonde over six feet tall, had a good figure, and was an Irish Catholic. She was a shade on the slim side (not as thin as I had been at her age), but her bone structure was in place and qualified her as a "Powerful Katrinka" in-the-making. Her father operated the Chicago Marina, where all the sailboats and yachts on Lake Michigan docked in the downtown Loop. He had once been a newspaper reporter who knew Chicago mobsters, including Al Capone. It was a world quite different from my father's cattle ranch in the Bad River Valley of South Dakota. She accepted dates with me on several occasions. Then I made the mistake of showing her my letter in the Round Robin that Maw had started before she died. In it I rhapsodized about Carolyn and described showing her around the Technological Institute, where "she stalked the corridors like Tyrannosaurus Rex in search of prey."

That was pretty much the end of that. It wasn't exactly her self-image.

The Newman Center had a program to teach the Catholic catechism to mentally handicapped kids from 8 to 18. I volunteered and got a class of about six. One boy, about 16, was handsome and looked completely normal. Most of the others had Down's syndrome. They were all capable of learning. The Down's kids were uniformly cheerful, happy, and well-adjusted, aware of their condition, but not

resentful, and eager to learn. They taught me a lot more about being a Christian that they learned from me. Human beings with these virtues are not so abundant that we can afford to cull their numbers. Amniocentesis now allows Down's syndrome to be detected in the womb. With this medical "breakthrough" some 96 percent of these people are murdered by abortionists. Why? Because their virtues are in short supply. I concluded these are the most valuable people among us because caring for them brings out the higher angels in human nature. Without them we become more brutal than savage beasts.

Northwestern also sponsored projects of this kind. One was tutoring Black children from the Lawndale district in Chicago. Female (rhymes with "Emily") Johnson was my student. She was pretty and her only learning "disability" was she wrote upside-down in her notebook. She turned the top toward her and began writing from right to left at the "bottom" of each page. When she finished and turned her notebook around again, everything was in place, beginning from left to right at the top of each page. I got her to begin writing normally by having her write on the blackboard. She couldn't turn that upside-down. There was a party at the end where tutors met parents. I said to Female's mother, "Female is such a pretty name. How did you pick it?" She said, "The doctor gave it to her. It was right there on her birth certificate, f-e-m-a-l-e."

Deering Library, the main library at Northwestern, was a short walk from the Technological Institute, and I spent hours going through the stacks for books on a variety of topics. One, *Those Astounding Ice Ages*, was written by a retired architect, Dolph Earl Hooker. Nobody had checked it out, but I did. His book, gathering dust and read by nobody but me, transformed my life. I became Ice Man.

Two other books were *The Races of Europe*, first by William Z. Ripley, a nineteenth century author, and then updated by Carlton Stevens Coon, as his doctoral dissertation. Coon went on to make studies of racial types his career, authoring three books which I bought. Ripley and Coon had to be influenced by Kipling's view of The White Man's Burden, but managed to keep that perspective out of their books. Coon came to Northwestern to plug his latest book and I attended his lecture. Afterward, I asked him if he routinely put people in one of his racial pigeonholes when he first met them. He strenuously denied that he did. His host invited interested people to join an informal discussion with him in another building. I followed Coon and his coterie down the sidewalk. A man walked past the group and after he passed, Coon exclaimed to the others, "That was a classic Alpine!" So he *did* classify people, even without formally meeting them.

Dr. Brittain was studying the physical and mechanical properties of alloys of nickel and aluminum in the beta phase. It extended from 46 percent nickel to 60 percent nickel, and formed the intermetallic compound NiAl at 50 percent nickel. The unit cell of NiAl was a cube with aluminum atoms at the corners and a nickel atom at the center. For aluminum-rich alloys, nickel atoms were increasingly absent from cell centers, until nine percent of these sites were vacant at 46 percent nickel. For nickel-rich alloys, nickel atoms increasingly replaced aluminum atoms at cell corners, until there was twenty percent replacement at 60 percent nickel. The color of the alloys changed from silver at 46 percent to blue at 48 percent to silver at 50 percent to pink at 55 percent to golden at 60 percent. I called it the rainbow metal in my doctoral dissertation. Alloys in this composition range resisted oxidation and had high melting points that peaked at l650 degrees Celsius at 50 percent nickel. These properties interested the US Army because rockets needed nose-cones that resisted oxidation and heat, so ARPA funded Brittain's research. The liquid fuel that propelled rockets was kept at low temperatures, and nickel-aluminum alloys in the beta phase are brittle at room temperature and below. A goal of our research was to find out why, and what could be done to make the alloys more ductile, so they could be forged into shapes like rocket nose-cones

without breaking. When I finished my doctorate, Rocketdyne, a division of North American Aviation located in California, offered me a job to continue that research.

For my master's research, I measured the thermal expansion of nickel-aluminum alloys in the beta phase from the temperature of liquid nitrogen to the melting point. For my doctoral research, I investigated the structure of these alloys over the same temperature range, using x-ray diffraction. At the higher temperatures, I discovered clustering of the vacant sites in the crystal lattice for aluminum-rich alloys, and a possible order-disorder transformation in which the nickel and aluminum atoms were randomly distributed above the transformation temperature. Gene Lautenschlager conducted creep experiments, in which cylindrical specimens having the same compositions were axially compressed over a range of high temperatures. He found that the alloys became ductile at these high temperatures, possibly due to the clustering and the order-disorder transformation I had discovered. Gene and I worked closely together during this research, partly under the supervision of the departmental specialist in x-ray diffraction, Jerome Cohen.

Dr. Cohen had an x-ray diffraction technician named Lenny Morrison, who was short, stout, and pig-faced. Lenny also played trumpet and specialized in hitting the highest notes. Chicago bands which had no musician who could do that would hire Lenny to play on occasions when the trumpet had to hit those notes. The bands played in nightclubs that were dark inside, with spotlights trained on the soloist musicians. When Lenny hit the high notes, his saliva would get atomized and shoot out the end of the trumpet in a shaft of droplets that were illuminated by the lights. People at the tables would point and say, "Look at that!"

Cohen was short and had a pleasant Jewish face, but he was a demanding taskmaster. When a student screwed something up, Cohen would say, "You're on my shit list!" One day he said that to me and I replied, "Well, I'm glad I finally made it! I was beginning to feel left out." Brittain also bawled me out in his office on one occasion. Later he came down to the lab, where I was passing aluminum chloride gas over a nickel "boat" in a furnace at about l500 degrees Celsius, in the hope of growing single-crystal "whiskers" of nickel-aluminum alloys in the beta phase. The furnace was just to the left of the entrance to the lab. As Brittain walked through the entrance he said to me, "I'm sorry. You're not really that incom…" Before he could finish the word "incompetent" the furnace exploded and the white-hot nickel boat and whatever was growing inside of it came shooting out of the furnace tube and splattered against the far wall, just missing Brittain's belly. He turned on his heel and walked away.

The Materials Science Department was rapidly gaining a good reputation and growing. Between my MS and PhD research, it moved from the Sheridan Road to the Lake Michigan side of The Technological Institute, where it occupied three floors and had a machine shop. I made a saddle ring out of a one-inch slice from a one-inch diameter stainless steel rod. One day, one of the machinists brought a live chicken to work. That reminded me of *The Saga of Powerful Katrinka*, which I related to the machinists. They didn't believe that she pulled the head off of the chicken, so I offered to give them a demonstration. I did (including the "Hee-yah!"), and they all cowered against the walls of the machine shop while the headless chicken ran about with blood spurting from its neck. Those city boys never saw anything like that!

Just before Christmas during my first year at Northwestern, Aunt Irene wrote me from Saint Paul, Minnesota, to tell me that she and her sister May were going back to South Dakota to spend Christmas with Paw and Josie. I didn't have a car, and Irene said I could ride back with her if I came up to Saint Paul by bus. She said I should meet her at a certain downtown restaurant. I wore the same getup I had on when I returned after Christmas; cowboy boots, a straw cowboy hat, and Paw's greatcoat with its enormous fur collar. As I walked from the bus station to the restaurant in downtown Minneapolis, cars were honking and drivers were leaning out of car windows yelling, "Hey cowboy, where's your horse?" I went in the restaurant, which was swanky. The *maitre d'* appeared, I told him that I was dining with my Aunt Irene, and he ushered me to the farthest table in the darkest corner of the restaurant. By and by I saw Irene come in. The *maitre d'* approached her, and pointed in my direction. Irene joined me, we ordered, ate, but never exchanged a word. Once outside, Irene said, "I'm walking to my car parked about a block away. Don't follow me until I'm fifty feet from you. I don't want anyone to know we're related." When she had walked that distance, I bellowed out, "Hey thar Aunt I-rene, wait up fer me!" Then I started loping after her. She looked around and broke into a run. We reached her car at about the same time. It must have been a sight! Irene was a tall rawboned woman on the run in all her finery with this rank "Mountain Man" in hot pursuit.

As a boy, I thought Irene and her older sister, Helen, were striking women. Both had jet black hair and blue eyes, and they had a regal bearing. Helen taught music in Pierre and when she came to the Big House for holiday dinners, she taught etiquette to my brothers and me. Paw told me that at one dinner when Helen was young and John F. Hughes still lived in the Big House, Helen referred to the people who lived along the banks of the Missouri as "river rats." John F. Hughes rebuked her, saying, "Those 'river rats' put the food on this table by voting for me as Circuit Court Judge."

Irene's hair had turned snow white by the time I met her in Saint Paul but she was still a striking woman. We drove to her house and May arrived shortly. May weighed over 200 pounds. A year earlier, John F. Kennedy had won the l960 presidential election. I already related how Irene loaded up the table with cans of 3.2 Grain Belt beer and, as the empty cans began to outnumber the full ones, it seemed to me that they were seeing JFK as the Second Coming of Christ.

Jim Patraw, my soul mate at the School of Mines, was teaching geology at Saint Thomas College in Saint Paul at the time. Irene moved to her house in Rapid City, and I began to visit Jim and his parents in Rice Lake, Wisconsin, for a few days each summer during my years at Northwestern. The Patraws became a second family to me. Jim and I drew and painted pictures together, and we would go off into the woods to re-enact scenes from John Wayne movies. I left two of my pastel pictures with the Patraws. One was like the final scene in *The Searchers* when John Wayne was standing in the doorway, just before he turned and walked slowly into the sunset. The Patraws lived in an elegant old house that had belonged to Irene Patraw's father, but Bill Patraw still owned his old family house that looked a bit like the house in *The Searchers,* so we called it "the Ethan Edwards spread" after the John Wayne character in that movie. My other painting was of an evangelical preacher "converting" an African cannibal who had filed teeth, a

bone through his nose, a necklace of claws, and was in a scanty leopard skin. The cannibal was on one knee and the preacher was standing over him with one hand on his head and a bible held aloft in the other hand, while God's glory streamed down on them from heaven above. My title for that painting was *SAVED*. Bill Patraw sent both paintings to me after Jim died.

Jim and I corresponded all the years right up to l974, when I got married. In one letter he mentioned that his family had vacationed on Madeline Island in Lake Superior. He rhapsodized about admiring "a big beautiful girl with a lantern jaw and russet-red hair who was shoveling shit in the barnyard as we drove by." From then on, she was the Madeline Island Maiden, Jim's one true unrequited love. Jim came to my wedding. After I introduced him to Beverly Ann Barr, the girl I was about to marry, and then was alone with her, I bawled like a baby because I was afraid that Jim would never marry and know the enduring happiness that was soon to be mine. He never did marry and, although Bev and I visited the Patraws once or twice in Rice Lake, our correspondence dwindled to just exchanging Christmas letters.

Jim had told me about whitewater canoeing on the Flambeau River in northern Wisconsin, and after that a small group of us from the Materials Science Department would drive up there every summer and spend a weekend running the rapids. The run passed through The Big Block, a stand of virgin timber that had never been logged. The forest canopy shut out so much sunlight that there was little undergrowth. We could walk unencumbered among the tall trees, as if they were columns inside a Gothic cathedral. I had described Jim's numerous talents to my fellow students, including his winning the heavyweight weight-lifting championship in South Dakota. After that, whenever Jim's name came up they referred to him as "The Champeen."

On one of those summer canoeing trips, we attended a county fair in Wisconsin that had an act by a Black man called "Popeye" who could pop his eyeballs out of his head. He wore a sailor suit, like Popeye. When a crowd had gathered, he said, "Have you ever been at a railroad crossing when a train was coming and those two red lights started blinking?" Then he popped his eyeballs out, one after the other, again and again, to mimic the blinking lights. Then he yelled, "Sherlock Holmes!" and pulled out a huge magnifying glass, popped one eyeball out, put the glass in front of it, and looked at us with an eyeball that seemed as big as a basketball. Some schoolgirls were in front of the stage and, at the end of his act, he congratulated them for not running away screaming, and gave them a quick bow. Then he popped out his eyeballs and straightened up quickly so it seemed as if they were suspended in the air at the end of their eyestrings for a moment before snapping back into his eye sockets. The girls ran away screaming.

Ara Parsegian was the head football coach at Northwestern during my early years there. His team had a number-one rating in the football polls, until Woody Hayes showed up with his Ohio State Buckeyes. Woody had a big Black fullback named Ferguson. It was a typical Woody Hayes three-yards-and-a-cloud-of-dust offence. With Northwestern, it was three downs and punt. Ohio State marched up and down the field, and that was the end of Northwestern's dreams of a Big Ten title. One of the campus cafeterias was next to The Technological Institute. I ate there regularly with John Hilliard and Tony Arco, a professor and student in the Materials Science

Department, as did the football team. Ara Parsegian and his head defensive coach, Alex Agase, sat at a table not far from ours. One day they motioned me over to their table and Ara asked if I would like to try out for the football team. I told them I was a graduate student and wasn't eligible. There went my chance to play Big Ten football. I watched Northwestern beat Notre Dame twice. Then I read that Parsegian was going to be the new head coach at Notre Dame. He took ND to a national championship.

At Northwestern, I was finally on a winning football team. I had played football in junior high school, in high school, and in college, but never on a winning team. Elliott Philofsky and a few other students in the Materials Science Department put together a team we called the Mats, and we began playing in the intramural football league. We won back-to-back championships. We also entered teams in the softball and wrestling competition, and won the softball championship twice on the arm of a terrific pitcher who wasn't in our department. I was a tackle on the football team. On the wrestling team, I won my early matches on brute strength, but lost when I came against experienced wrestlers in the later matches. Still, the Mats got points for every win. Stan Wulf, a pure Aryan, tall, blonde, with rugged good looks, came to our department from Deer Lodge, Montana, after graduating from MIT. He joined our football and wrestling teams, and we became good friends. We correspond to this day. Bev and I passed through Deer Lodge once. The state penitentiary is right in the middle of town. Was that why Stan left? While at Northwestern, Stan married Julie, a gorgeous brunette. It didn't last. When he moved to the Boston area, he married Sharon, of Irish-Portuguese descent. It lasted. They visited Bev and me after we married and had moved to Maine.

I showed Paw and Tim around Northwestern in l962, which was the year when Paw, Leo, Tim, and I spent our last Christmas together in the Big House. Then Paw had a massive stroke in l964. Tim was just turning eighteen and graduating from high school. Leo was married with children, so I was the one who was most free to go back to South Dakota and take care of Paw. Paw was terribly frustrated. His left side was partly paralyzed and his speech was garbled, but the cusswords came out loud and clear. I took him from the Big House in Fort Pierre to McKennan Hospital in Sioux Falls. I stayed with my aunt, Marguerite Schiltz, while surgeons tried unsuccessfully to reopen the blocked carotid artery that had caused the stroke. Then I took him to the veterans' hospital in Hot Springs for physical rehabilitation. My aunt, Josie Kelley, in Pierre helped me to clean up loose odds and ends left by Paw's stroke. Then I returned to Northwestern. Paw went home after the physical rehabilitation had accomplished as much as it could. He remained as county judge until l968. Eventually Josie had him admitted to Maryhouse, the Catholic nursing home in Pierre. He remained there until Bev and I liberated him early in l975 and brought him with us to Maine. He lived with us for almost six years and died in a Bangor nursing home, Westgate Manor, in l986.

As a youth, Paw had accompanied his older brother, Felan, on a cattle train from Fort Pierre to the Chicago stockyards. I had wanted to see the world famous Chicago stockyards, so one day I took the elevated train (called the "L" locally) down to the Chicago south side and walked several blocks to Halstad Street, where the stockyards were located and which had been one of the big Irish immigrant neighborhoods in Chicago in the last century. The blocks from the

"L" to the stockyards had become a Black neighborhood in the 20th century. Even the mannequins in the store windows were Black (What did I expect?). As I walked through, people stared at me as if I were the first White man they had seen. A band of teenage boys followed me for some blocks. The stockyards were neither as extensive nor as grubby as they had been portrayed in books like Upton Sinclair's *The Jungle*, which described the conditions Paw and Felan must have witnessed. The book centered on an immigrant family that had exchanged the fresh and clean air of a farm in Lithuania to the slime and disease of the Chicago stockyards. The lungs of tubercular cattle were ground up with other leftovers, stuffed into intestines, and labeled "Pure Country Beef Sausage" for the meat market shelves. Filthy children swarmed over heaps of hides, heads, and entrails of slaughtered hogs to collect pig bristles that would be used to make brushes. Animals were killed by men swinging sledgehammers as the beasts passed through long chutes from the collecting pens to the butchering sheds, where they were immediately strung up by their hocks, often still alive and bellowing, as their throats were slit and the blood was collected to give flavor and texture to blood sausage and other products. With pigs the boast was, "We sell everything but the squeal." *The Jungle* led to passage of the first federal pure food and drug legislation. It was a good read, but people were more concerned with diseased meat products from the stockyards than with the degradation of immigrant families who worked there.

From walks to the stockyards in south Chicago, to Aunt Ret's house in west Chicago, and elsewhere, I gradually became aware of the cultural mix that existed there during my Northwestern years and which I suppose still exists today. The commercial and cultural hub of Chicago was The Loop, where the "L" trains looped around the tall skyscrapers on the Lake Michigan shorefront. Most of the banks, the big department stores, including the biggest, the Merchandise Mart owned by Joe Kennedy, the University of Chicago, the Northwestern Medical School, the Chicago Public Library, the Chicago Marina, the Art Institute, many of the museums, conference centers such as McCormick Place, lakefront high-rise apartment buildings, the best restaurants, and the big movie palaces were all inside The Loop or nearby. Immediately beyond this complex was skid row, only a block or two wide, where winos, derelicts, dope fiends, and panhandlers shuffled about on littered sidewalks in front of cheap bars, cheaper hotels, and pawnshops, or had collapsed in a drunken stupor amid the garbage in the narrow alleys between crumbling brick buildings. Beyond skid row were Black neighborhoods that extended all the way to the Indiana state line in south Chicago, for many blocks in west Chicago, and for fewer blocks in north Chicago, which was also where hippies lived and smoked pot or burned incense inside their artsy-craftsy shops. Blue-collar ethnic White neighborhoods were located beyond the western and northern Black neighborhoods, and gradually merged with white-collar professional White neighborhoods that extended to the Chicago city limits and beyond into the suburbs. The super-rich lived in secluded estates beyond the suburbs, particularly along the North Shore, and commuted to The Loop in chauffeur-driven limousines.

A joke going around during my Northwestern years was about the wife of one of these tycoons. One sultry summer evening, while she was lying alone in her bedroom as usual, the French doors that opened onto the veranda were thrown apart by a gigantic Negro who stood naked to the waist, his ivory teeth flashing. She instinctively pulled the silk sheets up to her chin,

but to no avail. The huge intruder rushed to her bedside, stripped away the sheets, swept her up in his arms, leaped over the railing on the veranda, loped across the meadow behind the house, and carried her away into the forest. Finally, he came to a clearing and dropped her onto the moist grass. She looked up at him in terror. His black skin glistened in the moonlight, his chest was heaving, rivulets of sweat were trickling down his brawny arms, and his white eyeballs were rolling in his black face, as they swept up and down her trembling body. "What—what are you going to do now?" she stammered. "Don't ask me lady, dis is *yo* dream, not mine!"

It occurred to me that the financial, cultural, educational, and commercial heart of Chicago that was located in The Loop could be taken over by the surrounding Black population in mere hours and held hostage to extract ransom from The Establishment. The Loop was almost empty at night, and the nighttime guards and custodians were often Black themselves and elderly, few in numbers, and unprepared to cope with urban warfare. Just a few young men of the Black Panther persuasion could organize and arm the unemployed youth in the Black neighborhoods, and devise a plan to make a lightning strike into The Loop from the south, west, and north, probably on a Sunday when most businesses were shut down. If they could enforce secrecy and thereby gain the element of surprise, I had no doubt that just a few thousand could easily take over The Loop and barricade themselves in key buildings within hours.

If that had occurred to me, it also had occurred to the White men of The Establishment. Urban warfare had already taken place in Detroit and Los Angeles. Why not Chicago too? The plan to prevent that from happening, it seemed to me, was devised by the Chicago political machine of Mayor Richard Daley, in cahoots with the rest of The Establishment. They used their Democrat ward bosses in the Black community to identify young men who showed early signs of leadership and who had organizational skills. Typical examples were "The Reverend" Jesse Jackson, and later, Barack Obama. These men would then be courted by The Establishment, made to feel part of it, and thereby effectively plucked out of the Black neighborhoods where they might otherwise become alienated to the point where planning an urban uprising crept into their minds. If this sounds sinister and conspiratorial, I didn't see it that way. It seemed to me that this was the usual way that democracies operate to prevent anarchy. I was right. Most major American cities have had Black mayors since my Northwestern days. Anarchy was defused by the ballot box. Nonetheless, every large city in America has something like the Chicago Loop that is an easy target for urban guerrillas.

I took the "L" down to the Chicago Loop fairly often during my Northwestern years. All of the big movie palaces were in The Loop, and I never missed a showing of the great Hollywood epics that were produced during those years, movies like *Lawrence of Arabia*, where everyone rushed to the water fountains at the Intermission, after having burning desert sand in front of their faces for an hour, and a new release of *Gone With The Wind*. I particularly remember two John Wayne movies. His African movie, *Hatari*, premiered in Chicago and I got to see him in person afterward (he gave me an autographed photo I still have). I went to his Vietnam movie, *The Green Berets*, which began with the number-one pop tune, *The Ballad of the Green Berets*, written by Staff Sergeant Barry Sadler. Student opposition to the Vietnam War was building, but hadn't yet transferred over to the general public. *The Green Berets* was shown

on one of the biggest movie screens in the Chicago Loop. The screen lit up, JOHN WAYNE flashed onto it in letters that seemed sixty feet high, and pounding drums introduced the opening lines of the ballad, sung by lusty deep-throated men.

Fighting soldiers from the sky
Men who jump and men who die
Men who mean just what they say
The brave men
Of the Green Beret.

Everyone in the theater stood up as one and cheered wildly. I stood and cheered with them.

Later I composed my own verses to the same tune. Here are examples.

Into the jungle he led the way
But a mine lay under the clay
He gave his life defending our flag
They brought him home
In a rubber bag.

Hometown boy back from Vietnam
Passes in glory by the reviewing stand
His chest is covered with ribbons and medallions
His hearse is drawn
By six white stallions.

Flag-draped coffins at Arlington
The President says, “A job well done!”
Rifles fire one last farewell
Over sixty young men
All dead as Hell.

And for those who died while patronizing Saigon brothels, here is my tribute:

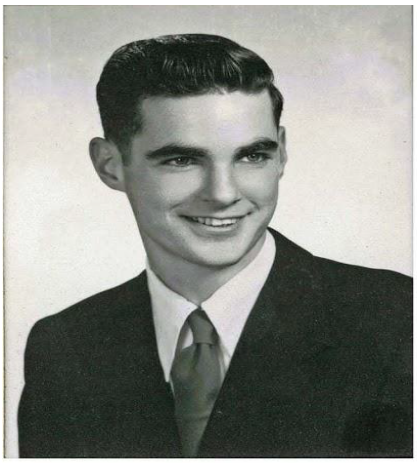
All that remained was an arm and a boot
Blown to Hell while getting a root toot
The drumsticks beat a-rat-a-tat-tat
The flutes they blew a-root-a-toot-toot.

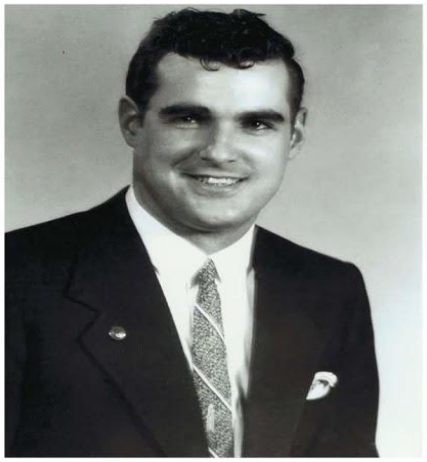
Then the refrain after every verse:

Put silver wings…on my son’s chest
Make him one…of America’s best

He'll be a man…they'll test one day
Have my son win…The Green Beret.

Ah yes. Those were the days.






ONE
WAY

Photos for Chapter 2: Education

Photos are numbered from left to right and from top to bottom.

1. My graduation photo from Fort Pierre High School in 1956.

2. Beverly Ann Barr's graduation photo from Margaretta High School in Ohio. She was in the first grade when I was a senior, but she married me anyway eighteen years later when I was thirty-six.

3. My graduation photo from the South Dakota School of Mines and Technology in 1960. I went from adolescence to manhood in two years, from age 20 to 22.

4. The Student Council with Superintendent Harold Kropuenske when I was a senior in high school. Next to me are Jim Hoffman and Bill Fischer. In Sheldon's classification of male physiques, I was a skinny ectomorph (145 pounds), Jim was a muscular mesomorph (165 pounds), and Bill was in between. We were classmates all through school. The girl was Janet Hawley.

5. Jim Patraw and I when we graduated from the South Dakota School of Mines and Technology in 1960. We are both mesomorphs, but we had been ectomorphs as adolescents.

6. I arrive as a cowboy hick in Evanston, Illinois, to attend Northwestern University in 1961. My father had given me his greatcoat. With good luck and hard work, the ONE WAY would be up.

7. Whitewater canoeing on the Flambeau River in northern Wisconsin. Jim Rechtein, Gene Lautenschlager, and I are from left to right. I don't recognize the two wearing baseball caps.

8. Franz Felberbauer, Bob Carnahan, and I on the Lake Michigan beach at Northwestern. Franz is a skinny ectomorph, Bob is a muscular mesomorph, and I'm a fat endomorph. According to Sheldon, these physical types remain fixed throughout life, but I've passed through all three, compare photos 4, 5, and 6. All three of us have remained in contact via e-mail messages. Franz became a general in the Austrian army and Bob became a very successful scientist and entrepreneur.

9. The two-time intramural champion football team fielded by the Materials Science Department at Northwestern. I was a tackle who was always double-teamed by our opponents, freeing one of us to sack their quarterback. Our quarterback was Elliot Philovsky, kneeling on the right. I've remained in e-mail contact with Stan Wulf, standing on the left. He was an MIT graduate from Montana.

10. Trophies won in intramural sports competitions by graduate students in the Materials Science Department. Sound minds in sound bodies. "The Mats" fielded the only winning teams I was on. I'm the fat slob on the left, competing in football and wrestling.

CHAPTER 3 – THE GREAT ADVENTURE

Red lines on the global hemispheres for Chapter 3 show my first trip around the world, mostly overland, while I was still a graduate student at Northwestern University.

Have you comprehended the breadth of the earth? -- Job 38:18

I got my master's degree from Northwestern in l962, and finished writing my doctoral dissertation in l966. It was long, 567 pages including ten appendices, and I figured it would take Dr. Brittain a year to read it. I handed it to him, said I would be back in a year, and began a trip around the world. I had wanted to see the world since I was a boy, when Paw would tell us stories from his trip around the United States when he was a young man. A full account of my trip is the stuff of a separate book taken from my travel writings but a brief overview is in order, since that experience became a major influence on the rest of my life and led directly to my career in glaciology.

The centerpiece of my trip was two months in the Soviet Union, which I had arranged with Vega Travel Agency in Chicago. I would travel in Russia in the pension tourist category that Intourist, the official tourist agency, made available primarily to students with little money. I wanted to enter from the east and leave from the west. Where I went after that was left open, but I had a few places in mind, such as Ireland. All expenses in Russia were prepaid, and Vega gave me a booklet of coupons for meals, lodging, guided tours, and travel by train or plane. For other expenses in Russia, such as gifts and souvenirs, and travel to all other countries, I carried American Express Travelers Cheques. I left Chicago on l9 July l966, and returned on 28 May l967. Counting the various republics that I visited in the Soviet Union as separate countries, which they now are, I had visited 53 countries at a total cost of about $5000. I traveled overland almost the entire time, arranging visas and modes of travel as I went along. When I started, I was a fat slob weighing 250 pounds. When I returned, I was lean and 40 pounds lighter. I never once got sick. Although I was $5000 poorer, I was richer in every other way.

I left downtown Chicago by bus at 5:30 AM on Monday morning, July l9th, on my way to Alaska. The bus took me through Wisconsin and Minnesota, and followed the valley of the Red River of the North into Canada. I changed busses in Winnipeg and crossed the Canadian prairie wheatlands and had four hours in Edmonton until a midnight bus took me to Dawson Creek, where the Alcan Highway to

Alaska began. The Northern Lights blazed in the night sky until dawn. The bus stopped at every town along the Alcan, but they got fewer and farther apart. The main stop was Whitehorse in the Yukon Territory, where ferries took prospectors down the Yukon River to Dawson and the goldfields during the Klondike gold rush. Two stern-wheel ferries were still there, in dry dock. The road beyond Whitehorse was gravel, which was easier to maintain than asphalt because much of the ground was in the permafrost condition. The road climbed steadily, and near Lake Kluane we could see Mount Logan in the distance. It is in the Saint Elias Range and is the highest mountain in Canada. Our bus arrived in Fairbanks around 7:00 PM on July 23rd, where "Golden Days" were being celebrated, another reminder of the l890 gold rush. With its saloons and frontier atmosphere, Fairbanks reminded me of Fort Pierre. The next morning, I attended Mass and took the bus to Anchorage, where Felan's son, Johnny, had the biggest law firm in Alaska. He put me up and showed me the sights. His daughter, Patty, and her boyfriend took me to see Portage Glacier. I had seen Matanuska Glacier from the bus as it came down the Matanuska Valley to Anchorage, but we could hike around Portage Glacier. Only two years later, I would be standing next to the biggest glacier on the planet, the Antarctic Ice Sheet, and would have begun my career as a glaciologist.

I took a Japan Airlines flight from Anchorage to Tokyo, and arrived about 6:00 PM on July 29th, after losing a day crossing the International Date Line. The main thing I wanted to see in Japan were the Ainu, who are the aboriginal people of Japan. The first Europeans to see them thought they were of the Caucasian race, not the Mongolian race like the Japanese, because the Ainu had bushy beards, more rugged facial features, and occasionally had reddish hair and blue or gray eyes. There were only a few villages of Ainu, and they were all in the northern Japanese island of Hokkaido. I took a train from Tokyo to Sapporo, and then took a bus to the Ainu village of Shiraoi. Some indeed were as the first Europeans described, but most were now mixed with the Japanese. Twenty two years later, in l988, I attended a symposium of the International Glaciological Society that was held in Sapporo. When I asked if we could visit an Ainu village, we were taken to one where they all looked Japanese, and I was told that no pure Ainu remained.

On August 4th, after seeing Kyoto and some other sites in Japan, I boarded a Russian ship across the Sea of Japan to Nakhodka, which was the only Russian city on the Pacific Coast that was open to tourists, and was the railhead for the Trans-Siberian Railroad. The only Siberian cities where I could get off the train and go sightseeing were Khabarovsk, Irkutsk, and Novosibirsk, the "science city" on the Ob River. The most memorable sight was when the train rounded the western end of Lake Baikal, the world's deepest lake, nestled in the mountains south of Irkutsk. I was able to take a hydrofoil boat cruise on Lake Baikal from Irkutsk. I left the Trans-Siberian Railroad at Novosibirsk on August l4th and entered Central Asia, the Moslem part of the Soviet Union. I visited Alma Ata, Tashkent, Samarkand, Bukhara, Dushanbe, and Ashkhabad. There is magic in these names. The Scottish poet, Flecker, wrote of "the golden road to Samarkand." These towns had been nomadic settlements on the silk route to Cathay that Marco Polo described. Much of downtown Tashkent had been destroyed by an earthquake earlier that year, l966, and there was considerable earthquake damage to the big mosque in Samarkand that had been built by Tamerlane, a descendant of Genghis Khan. Times had changed. All over the Central Asian cities, and in other cities of the Soviet Union, I saw big posters ridiculing religion, whether it be Islam or Christianity.

I attended Sunday Mass in the Russian Orthodox Church in Samarkand on August 2lst. After the sermon, the priest cradled a crucifix in one hand and held a small cross aloft in his other hand. People came forward to kiss the crucifix. I joined them and, after I kissed the crucifix, the priest touched my head and both shoulders with something. In my journal I wrote it was the crucifix, but I think it may have been the small cross. I don't know for sure. He didn't do that to anyone else and, as he did, a current like electricity ran through me. Had it lasted more than a few seconds, I could not have endured it. When I

walked back to where I had been standing I felt light as a feather, and should not have been surprised if I had been walking on air. The only other worshippers were old Russian women in peasant attire. When we left the church after Mass, some children outside ridiculed these women until a Russian monk who looked like Lon Chaney, Jr., shooed them away. Thinking about that later, I knew why I got the special blessing. Here was a remnant Christian community isolated in a Moslem culture and in a Communist nation that professed atheism, so the old women were objects of ridicule by their own grandchildren, who were lost to the faith. Then one day a stranger comes wearing cowboy boots and a cowboy hat. He is obviously an American from halfway around the world. He comes not to gawk, but to worship with them. He removes his hat and participates in the Russian Orthodox Mass. They were not alone. Perhaps I flatter myself, but something special happened there. To this day my spine tingles when I think about it. I don't know if any of those women were still alive twenty three years later, in l989, when that whole atheistic empire vanished like a mirage on the desert horizon, leaving only the voice of God whispering to them in the cool night breeze.

From Central Asia, I crossed the Caspian Sea to visit the Caucasus republics of the Soviet Union, Azerbaijan and Georgia. Josef Stalin was a Georgian, and it was only a few years since Nikita Khrushchev had publicly denounced Stalin, and ordered that his statues and portraits be pulled down all over the Soviet Union. On September 1st, when I was wandering about Tbilisi, the Georgian capital, I came upon the entrance to a vast labyrinth of rooms cut into the side of a mountain. I went inside and eventually found a huge room piled high with pictures and busts of Stalin. The Georgians were keeping them for the day when their man would be rehabilitated. I thought, "Save your Confederate money. The South will rise again."

From Tbilisi, I took a train to the resort towns, Sochi and Sukhumi on the Black Sea, and continued by train into the Ukraine republic, where I visited Rostov, Kharkov, Odessa, and Kiev. On the train and at the hotels in these cities I came across many Third World students, as well as Russian student guides, who were hungry for discussions comparing Russia and America. My account of those conversations in my journal, dating from the heyday of Soviet power, preserves a look into a world that now seems almost unreal. Everything was possible and nothing was possible. I also took a train to Odessa and Yalta on the Crimea, where Roosevelt gave Eastern Europe to Stalin.

I continued by train to Moscow and saw the usual things; the Kremlin, Red Square, Lenin's Tomb, the Tsar's bell, the Tsar's cannon, Saint Basil's Cathedral built by Ivan the Terrible, the Archangel Cathedral where Napoleon stabled his horses, the museums, the Metro subway, the Exhibition Grounds to see the first sputnik to orbit Earth, and the national puppet show. I left Moscow on September 24th by train to Leningrad and Murmansk. My high point in Leningrad was attending the opera, *Katerina Ismailova*, by Dmitri Shostakovich. I also took a bus to Novograd, which means "new city" but in fact is the oldest city in Russia. It also has a Kremlin, which means "walled fortress." The Republic of Novograd withstood the Mongol hordes in the thirteenth century. The Nazis destroyed the Novograd Kremlin, but the Russians rebuilt it. Novograd was an artist's delight, an architectural gem. The churches and monasteries were superbly ornate, and seemed to have escaped the Nazi cannons and the atheists' wrecking ball.

From Leningrad, I took a train to Murmansk, which is north of the Arctic Circle on the Kola Peninsula east of Finland. On that train trip, I passed through three seasons in three days. Late summer foliage prevailed when the train left Leningrad. When dawn arrived, mid-autumn foliage with Nature's paint box of colors greeted my eyes. When I awoke on the morning of the third day, snow was on the ground and winter had arrived on a treeless tundra. Murmansk and Archangel are the two ice-free Russian seaports on the Arctic Ocean. American ships brought armaments of all kinds into Russia through these ports during World War II, because the Nazis controlled Russian seaports on the Baltic Sea. I was the first American tourist to visit Murmansk since the war, so the local reporters arranged an extensive interview.

It lasted two hours and covered everything from the Ku Klux Klan to the Vietnam War, but it ended with a discussion about Communism versus Christianity. By that time I had been two months in the Soviet Union, and I had attended or attempted to attend Mass on every Sunday. I saw up close and personal how Christians were persecuted by atheists. My journal was full of these accounts. I told them they were not free. That's where the interview ended. They asked for my written statement to be printed in their newspaper. I gave them one and said if it wasn't printed, they would know I was right.

I took the train back to Leningrad on October 1st. In Leningrad, I visited the Hermitage and the Kazan Cathedral, which had been converted into an anti-Christian museum. One exhibit was torture devices used during the Spanish Inquisition. I suppose they were on loan from the Soviet NKVD. Around midnight on September 5th I left Leningrad by train to Vilnius, the capital of Lithuania, the only Catholic republic in the Soviet Union. I was to spend a day there, but Intourist put me on the noon train to Poland. Steam locomotives were widely used in Russia, and a brand new one pulled our train. We switched trains at the Polish border because Russian rails were wider. I spent a day sightseeing in Warsaw and at once saw the contrast when Christianity is not suppressed by an atheist government. Small shops were thriving, Christian symbols were everywhere, churches had nightly rosary services, streets were full of laughing children, adults had smiling faces and were eager to chat with an American. It was the opposite from what I saw in Russia in every way. Russia's few shops had empty shelves, atheistic exhibits were everywhere, churches were empty and dilapidated, the few children didn't laugh, nobody smiled and nobody chatted, especially with an American. When I boarded the train that took me to East Germany, it was like entering Russia again. I was so anxious to get out of East Berlin that I began running across the strip of no-man's land between the VoPo (East Berlin police) checkpoint and Checkpoint Charlie in the American sector of West Berlin. A VoPo behind me yelled "Halt!" but held his fire.

Three days in Berlin were enough. Although West Berlin was free, everyone felt enslaved because it was split off from East Berlin and surrounded by Communist East Germany. I took a train to London on October l0th. I crossed the English Channel from Holland to East Anglia on a night ferry. London was preparing to celebrate Guy Fawkes Day. After three days of sightseeing in London, I took a train to Hollyhead in Wales, crossed the Irish Sea by ferry, and arrived in Dublin on October l5th. At Dublin Castle I found that the name Hughes was derived from a Gaelic clan named MacAdoha. Farmers from all over Ireland had walked into Dublin to protest farm prices. I went north to Drogheda, where Cromwell slaughtered the inhabitants, down the Boyne Valley where "King Billy" won his big victory, went to Slane where Saint Patrick lit the paschal flame that ended the Druidic religion in Ireland, climbed the Hill of Tara where the High Kings ruled, went to the Rock of Cashel where the Munster kings ruled, went on to Cork and Blarney Castle, where I kissed the Blarney Stone, and passed through Limerick on my way to Galway, where my grandmother, Ellen Feeney, told Queen Victoria she was going to be an American. From Galway, I took a boat to the Aran Islands where people still speak Gaelic, went into the wilds of Connemara to see the Twelve Bens, took a boat to Achill Island off the coast of Mayo, visited County Roscommon where families of Feeneys still lived near Balygar, and crossed the bogs of central Ireland to County Monaghan, where the Hughes name is still commonplace.

Near Scotshouse in County Cavan, I found a retired New York Irishman who took me to see the Black Pig's Dyke. It was the pre-Christian border between Ulster and the rest of Ireland, and Orangemen cite it as proof that Ulster had never truly been part of Ireland, never mind that most of the High Kings of Tara came from Ulster clans. Once in Ulster, I visited Omagh and met my first Orangeman, strolled along the city walls of Derry, walked the rocky coast of Donegal where my great grandmother, Margaret Connally was born, went to Coleraine, and came down through the glens of Antrim to Belfast, where the Harland and Wolfe shipyards built the *Titanic*. Ian Paisley was holding an anti-Catholic rally outside of town. I took a train to Larne and stayed at a youth hostel where Protestant teenagers from Belfast sang Irish rebel songs!

I took the ferry from Larne to Galloway in Scotland on October 30th, ending my fortnight in Ireland. I caught a ride to Glasgow and Perth. I had planned to continue on to Inverness, but I learned that all the Highland hostels had closed for the season, so I went to Edinburgh instead. On my return to London, I saw the magnificent Firth of Forth bridge. Back in London on November 1st, I spent three days getting visas for some Balkan countries, and spent Saturday evening watching the Guy Fawkes Day celebrations in Trafalgar Square. After Sunday Mass, I went to Hyde Park and listened to people rant on Speakers' Corner. Professor Jerry Cohen from the Materials Science Department at Northwestern was on sabbatical in London. I located him and he invited me to spend the night at Harlow on the Hill, where he lived. He recorded my impressions of the Soviet Union on tape. The next morning, he took me back to his London office, and I went on to Victoria Station, where I boarded the Orient Express to Istanbul on November 8th. I watched the White Cliffs of Dover fade from view as I crossed the Channel to Belgium.

By morning the train was crossing the rolling Austrian countryside decked out in fall colors, then crossed the flat plain of Hungary, and arrived in Budapest at dusk. After a delicious supper in a superb restaurant, I crossed the Danube from Buda to Pest and climbed the hill to the Citadella, a large fortress that affords a magnificent view of Budapest at night. Buildings still had shell holes from Soviet tanks that crushed the Hungarian uprising a decade earlier.

The train arrived in Belgrade on the morning of November 10 th. I went immediately to buy a boat ticket down the Danube through the Iron Gate, a gorge through the Transylvanian Alps and one of the great sights of Europe. The boat left before dawn the next morning and rose up on hydrofoils that propelled it down the river at 60 miles per hour. The Danube narrowed as it passed through the Kazan Gorge, which I described in my journal as "like a journey down the River Styx through the bowels of the earth" between walls of metamorphic rock that "became twisted and warped unbelievably." Then the boat entered a quiet lagoon 2000 yards wide and surrounded by mountains before entering the Iron Gate itself. Water drained from one-third of Europe roared through a gorge between rock walls under 200 yards apart that rose straight up to the summits of mountains. "Such majesty and loneliness cannot be described", I wrote, "It was like the River of No Return." Here the Danube was the deepest river on Earth. A slot was cut by Roman Centurions into the south wall above water's edge, along which oxen pulled Roman boats upriver against the swirling current. At one point a Latin inscription was carved in the rock announcing that this road was cut during the reign of the Emperor Trajan. Now it is all under water. A dam was being built across the Danube just below the Iron Gate even as I passed through it. Now that magnificent passage, beyond human description, is lost.

Back in Belgrade, I again boarded the Orient Express, which passed through Bulgaria and Greece twice before entering European Turkey. It arrived in Istanbul late in the afternoon of November 13th. I checked into a hotel on Taksim Square and then tried to find a Catholic church so I could attend Mass. I found one at 9:30 but the last Mass was at 7:00. It was the first Sunday Mass I had missed on my whole trip. I planned to go on to Baghdad, but the train didn't leave until Thursday, so I had four days in Istanbul. It was a capitalist's paradise. Every Turk seemed to be in business, from those driving Mercedes limousines through the crowded streets to one who was just selling ballpoint pen refills laid out on a cloth spread out on the sidewalk. Money is changed on the black market, l5 lira per dollar, but the Russian Embassy gave l8 per dollar and American servicemen stationed in Istanbul were customers. The official rate was 9 per dollar. I crossed the Golden Horn on Ataturk Bridge and checked into the local YMCA. Inside, two Americans were counting greenbacks that they got from one of Istanbul's major banks, but which looked counterfeit to me. I reported that and the Russian black market in dollars to a brigadier general and a treasury agent named Casey at the US Embassy. The general was mostly interested in GIs going to the Russian Embassy to change money. Balkan intrigue! It seemed to be the theme of countless Humphrey Bogart, Peter Lorre, and Sydney Greenstreet movies, and here I was in the middle of it. When that wasn't occupying my time, I saw St. Sophia's Cathedral (which had been converted into a mosque),

the Blue Mosque, the Golden Horn, the Roman aqueduct, the old city wall, the hospital founded by Florence Nightingale, the royal palace of the Turkish Sultans, and the University of Istanbul, where Paul Anderson, head of the Metallurgy Department at the South Dakota School of Mines, had founded a metallurgy department.

On the morning of November l7th, I took a ferry across the Bosporus and boarded the train for Baghdad. On the train a Californian named Randy told me students got a 50 percent discount on train tickets in most countries. After four months, I was still an innocent abroad. Randy headed a Rock 'n Roll group and he was going to India to get ideas for his music. We passed through rolling or flat country that was dry and mostly treeless on the way to Ankara. Beyond Ankara, our train passed through the snowcapped Taurus Mountains of southeastern Turkey and descended through rugged canyons from the Anatolian Plateau into the Fertile Crescent, the womb of civilizations. Our train stopped there for the night, while the steam locomotive was greased and cars going to Baghdad in Iraq were separated from those going to Aleppo in Syria. The train to Baghdad passed little villages of dome-shaped windowless houses like those seen in Christmas cards beneath the Star of Bethlehem. After dark, we crossed the northeast corner of Syria before entering Iraq. The train stopped in Mosul, and we boarded another train built for the narrower gauge railroad tracks in Syria. That train was full of soldiers who were returning from fighting Kurds in the northern mountains of Iraq. When it stopped in Samarra, Randy and I got off to climb the high spiral minaret at the edge of town that reminded me of paintings of the Tower of Babel. It was dark when the train arrived in Baghdad, too late for Sunday Mass, even though I found a Catholic church. A sizable minority of Iraqis are Chaldean Christians, one of the first Christian communities. Randy and I stayed at the YMCA.

We spent three days in Baghdad sightseeing. It has many mosques, but most impressive was the Arch of Cetephon, which dates from Persian rule. It is the highest and largest non-reinforced span on the planet, and is made of fitted stones. Most memorable was the trip to the ruins of ancient Babylon, which we took in a station wagon accompanied by two Brits. Babylon, with its Hanging Gardens, was one of the seven wonders of the ancient world. Now it was vast heaps of rubble in the midst of a wilderness. "I will make of it a haunt of hoot owls," said the Lord of Hosts (*Isaiah*, l4:22), and indeed that's what it was, and had been for over 2000 years. The Iraqis had restored one of the avenues of Babylon, so visitors could see its former glory, and had plans for rebuilding the Hanging Gardens. They had a small museum there, which housed artifacts and had a model of the city in its glory days under the Babylonian kings.

On our return to Baghdad we passed women carrying huge haystacks, as they ran laughing and weaving along the highway. They were a sight to see. A sight of a quite different kind in Babylon were four European beatniks, two girls and two boys, who were returning from India and had stopped in Kuwait long enough to sell their blood at the premium price of $28 for 300 cc. One boy had amoebic dysentery for three weeks and was a walking skeleton. Yet he sold his blood. I had met many young people going to or coming from India, and I was of two minds whether to go there or go south through Africa. After seeing how bedraggled those returning looked, especially the emaciated boy, I decided that Africa was better. Although conditions in parts of Africa were no doubt as grim, India was an old civilization that wouldn't change much so I could take that trip another time. Africa, on the other hand, was changing rapidly, having just passed from tribal rule through colonial rule to newly independent states. This was a unique moment in history that would not last. I would either capture it now or forever lose the opportunity.

On November 23rd, Randy and I got visas to Kuwait and boarded the train to Basra, the Iraqi city at the head of the Persian Gulf. Then we took a taxi to Kuwait, where Randy hoped to get a boat to India and I hoped to get one to East Africa. We slept on the ground outside the walls of the British Embassy. The next day I found a cargo ship bound for Djibouti. I wanted to see Djibouti. In an old Bette Davis movie, she is married to Errol Flynn and they live in San Francisco. He has the wanderlust, and one

evening he is in a waterfront saloon listening to some seamen. One says that a tramp steamer bound for Djibouti needs crewmen. Errol mutters, “Djibouti,” and his eyes get that faraway look. Bette is left behind to go through the San Francisco earthquake and its aftermath. I didn’t get to Djibouti. The cargo ship in Kuwait wasn’t taking passengers.

My blood type wasn’t needed in Kuwait (hey, $28 is $28), so I went back to Basra. It was dark and all the painted homosexuals were streetwalking. I met a German and we spent the night on a pontoon bridge where the Tigris and Euphrates rivers met. The next morning we caught a bus to Baghdad. We arrived covered with oily soot that seeped from the exhaust into the bus. Once again, I arrived in Baghdad too late for Sunday Mass. Anyway, I was filthy, so I spent the evening cleaning my clothes and myself at the YMCA.

On November 29th I began my journey to Africa. I hitchhiked from Baghdad to Amman, the capital of Jordan. I crossed the Arabian Desert in a truck to the border and then took busses to Amman. The desert was covered with boulders of all sizes, a most remarkable sight. Nothing was growing but occasionally I saw horses, flocks of sheep, and Bedouin camps. Broken-down trucks marked the desert crossing, and our bus joined them for an hour until the driver got it going again. I arrived in Amman the next day, changed money, and took a bus to Jerusalem. In l966 the old city of Jerusalem was in Jordanian-occupied Palestine. The YMCA in Jerusalem was a palace; too expensive for me.

I registered at the American Embassy in Jerusalem, where I read a story in *Time* magazine about Israel’s three problems. First, things in the Middle East had been quiet since the Suez War in l956, so financial support to Israel from Jews in the diaspora, notably American Jews, had fallen off. Second, the emigration rate from Israel had exceeded the immigration rate, and the ones leaving were mostly young Jews who wanted to avoid serving in the Israeli army. Third, American and European Christian tourists were beginning to bypass Israel to take advantage of Arab tourist packages that landed tourists in Beirut, took them to see the old Phoenician cities of Sidon and Tyre, then on to Damascus and Amman, then to the old city of Jerusalem, Bethlehem, the Jordan River, and other places where Jesus Christ walked and taught in what is now called the West Bank, and then on to Egypt to see the pyramids and other sights, before taking return flights to the tourists’ home countries. Israel solved all three problems a few months later, with the l967 war. Money from diaspora Jews poured in, emigration of young men was curtailed, and Israel took over the West Bank.

I stayed at the Lutheran youth hostel in the old city of Jerusalem. From there I went to the nearby Church of the Holy Sepulcher. Its grounds include the sites of both Christ’s crucifixion and resurrection. A Dominican brother from Kansas told me that Teddy Kennedy was to arrive shortly. He was an hour late. I took some pictures when he and various Kennedy Klansmen finally showed up. He said he was there to pay respects to Our Lord, not to campaign, but one American who shook his hand said, “See you in the White House.” If he’s still alive, he’s still waiting.

On December 1st, I went to confession and communion to ease my conscience about the Masses I had missed, and then went to the Garden of Gethsemane on the Mount of Olives and climbed the Mount of the Ascension. The next morning, I attended Mass at the foot of the cross on Calvary. I also visited the Garden Tomb, which “Chinese” Gordon, a Scottish general in the heyday of the British Empire, found and thought was Christ’s tomb. The next morning, I served Mass at Christ’s tomb. The Mass was said by an Irish priest returning from the Philippines. Then I and two Brits went to Bethlehem to see the manger where Christ was born, the shepherds’ field, and the mount where Herod built his palace. Bethlehem was full of Christian Palestinians who had left or had been forced out of Israel.

On Sunday, December 4th, I offered Mass and Communion at Calvary for my parents. Then I walked the Via Dolorosa where Christ carried His cross to Calvary. Two Brits and I went to Jericho,

which is 9000 years old, and saw the ruins of the walls that tumbled down to let in Joshua. I climbed the Mount of Temptation where Satan showed Jesus “the kingdoms of the earth.” We went to the Jordan River, where Jesus was baptized. We went swimming in the Dead Sea, where we floated like corks. It is 40 percent salt, and when we got out to dry in the hot sun, the salt turned our bodies white, like Lot’s wife when she looked back on Sodom and Gomorrah.

The next day, following Mass in the Church of the Holy Sepulcher, I hitchhiked to Amman and the next day I caught a ride to Aqaba on the Gulf of Aqaba, where I hoped to get a boat across the Red Sea to Egypt. At one checkpoint, I was slow in producing my passport until one of the guards whipped up his rifle, aimed it between my eyes, and slammed a bullet into the barrel with the sliding bolt. Beyond the checkpoint, we passed through the Wilderness of Sin south of Ma’an. In my journal, I called it “the land of the Big Rock Candy Mountains, because the pink peaks were marbled with veins of red, black, and green minerals. We rode into a setting sun. It was magnificent.” In Aqaba, I met some American sailors who told me that all the world a sailor sees is different ports and different whores. I told them that here the whorehouses were filled with boys, not women. I soon spotted a boy accompanying two Arab soldiers into a large dim building in the bazaar area.

No boats were going to Egypt. I caught a ride back to Amman, but got off to see the lost city of Petra near Ma’an. The entrance to Petra is a very narrow gorge through a sheer wall of sandstone. At the other end of the gorge, the first sight is a temple carved into the pink sandstone. The gorge opens up into a rock-walled canyon, and all of the buildings are carved into the sandstone walls. I spent the night in one of the many caves. Petra had been built on the trade route to Egypt, and was a haven against bandits. After the Romans conquered Petra, they built an outdoor theater. It was the only structure not carved into the rock walls. The pink sandstone was stained with the same colors I saw in the Big Rock Candy Mountains. Petra at dawn and dusk is a marvel to behold. All of the magnificent colors tend to dissolve in bright sunlight.

Back in Amman, I spent the night in a cheap hotel and the next morning I took a bus north to Jerash, an old Roman villa in a remarkable state of preservation. It has one of the best Roman theaters to be seen anywhere. An Arab on his way to Damascus stopped at Jerash and gave me a ride in his car. We stopped at a checkpoint on the border with Syria. The Jordanian guards offered us little cups of Turkish coffee. It tasted as bad as the coffee I had at the Red Cross canteen during the l952 flood in Fort Pierre. I decided to drink it anyway, rather than run the chance of getting another rifle pointed between my eyes. Two of the Arabs at the checkpoint were redheads. I was to discover that red and brown hair and blue eyes are more common in Syria and Lebanon than in Iraq, Kuwait, and Jordan. Perhaps the Crusaders from Medieval Europe left these calling cards. From Damascus, I paid one dollar for a taxi to Beirut. The parts of Syria I saw were fertile, but the villages were poor. The taxi crossed the Lebanese mountains after dark, so I saw the famous cedars of Lebanon only in twilight. I stayed at the YMCA in Beirut, where I found two Germans I first met in Baghdad. Like me, they wanted to go to Egypt. On Saturday and Sunday I attended Mass. The Sunday Mass was at a Catholic Church of the Maronite Rite.

On December l3th, I boarded an Egyptian ship to Alexandria. In leaving the Arab countries of Asia, I should comment on the abundance of Arab hospitality showered on me. Hospitality to strangers is mandated in the Koran, and I can testify that it is carried out in practice. My journal has many accounts of being invited into Arab homes, being treated to meals by Arabs, and being given rides by Arabs. I didn’t have much money, so these gestures were most welcome. They gave me a look into Arab culture and led to many conversations recorded in my journal. They shared their views of the world and their opinion of Americans, which at that time was positive. It would not be positive today. I have been in these countries since then, and not only in Iran is America now called the Great Satan. It isn’t American support for Israel. That support existed in l966. It is the degeneration of American society and an American foreign policy that is seen as obsessed with castrating the Third World, especially the Arab world.

The ship was small. It rolled and pitched on the heaving Mediterranean swells, and the food was bad. Fewer and fewer passengers attended the meals. A large grinning picture of Nasser looked down on the diners. At breakfast on the second day of our passage to Egypt, I commented, “Well, it looks like President Nasser is enjoying the trip.” That triggered the only laughter on the voyage. Palm trees appeared on the horizon at 1:00 PM and by 4:00 PM our ship was entering the port of Alexandria. Our ordeal was over.

My intention was to travel overland across Africa from Cairo to Cape Town. I took a train to Cairo and found the youth hostel. It had the usual assortment of foreign travelers, mostly young and all claiming to be students to get cheaper bus and train tickets. Few of us cared whether anyone actually was a student, at what university, and what degree was being sought, but most could produce a student identity card. I spent the first three days getting visas. I couldn’t get a Sudanese visa until I got an Ethiopian visa, but Ethiopia required a Kenyan visa and Kenya required a Tanzanian visa. Tanzania had no such restrictions, so I got my visas in the reverse order of the countries I planned to travel through. My hope was to take a boat up the Nile all the way to Kenya, but a civil war in the southern Sudan made that impossible. The war continued for decades, and may break out again. It is religious and racial. The southern Sudanese are neither Moslems nor Arabs.

Finally, on Saturday, I was able to go sightseeing. Even though I had seen pictures of the pyramids and the Sphinx since I was a child, photographs did not prepare me for the real thing. The first impact is the sheer size of these monuments. After being overwhelmed by their scale, I was awed by the precision of the craftsmanship, an awe that grew the more closely I inspected their construction. Then, when I realized that what I was seeing was the result of 5000 years of weathering and vandalism, not how they appeared when new, and that they were built using Stone Age technology, I finally appreciated that I was looking upon the greatest achievement of the human race until men walked on the moon. I thought that then and I think that now.

On Sunday, December l8th, I took the train to Luxor to see the Valley of the Kings. I traveled third class and it was like being packed into a cattle car. In some ways it was like a refugee train because so many people seemed to be taking all their belongings with them. There were many stops along the way, with people getting on and off, climbing over one another, and young boys getting on to sell food and goods while the train was stopped. It was an overnight train, and I tried to sleep on the filthy floor, but it was cold and damp, and after every third stop the conductor would pass through asking to see our tickets. By 9:00 AM enough people had left so I could sit on one of the wooden benches, and I finally got to see the Nile Valley. It was incredibly lush and bountiful. Rice is harvested seven times a year. Everything grows there. Bales of cotton were piled high at every train station. Irrigation methods used in the days of the Pharaohs were still being used. Truly, Egypt is the gift of the Nile.

Luxor occupies the site of the ancient city of Thebes. The Temple of Luxor is located right in the city. It is another massive structure. After wandering through that, I rented a bicycle and pedaled along with other tourists to the Valley of the Kings. On the way we passed the Colossi of Memnon. The tombs of the Pharaohs, Amenhotep, Rameses IX, Tut, Seti, and others, were carved into the valley walls. Inside were corridors that led to the burial chambers, all decorated with hieroglyphics and paintings, often in relief. Back in Luxor, I went to see Karnak, the main temple of the Thebesian Pharaohs. In front of the temple was a wide avenue flanked by rows of stone lions on either side. It was recreated in Cecil B. DeMille’s epic movie, *The Ten Commandments*. As Moses, Charlton Heston led the Israelites down the avenue of lions on their way to the Promised Land. Luxor had a Catholic church, and I caught the 6:00 PM Mass.

About ten percent of Egyptians are Coptic Christians who date from apostolic days. Their ties to Egypt of the Pharaohs are stronger than the Moslems because they are less immersed in Islam. A

Christian Egyptian gave me a tour of the Coptic church in Luxor, with its icons depicting the life of Christ.

The next day I took the train to Aswan, which had grown rapidly when the Aswan High Dam was constructed across the Nile. The sides of the Nile Valley are towering cliffs several miles from the river in Lower Egypt, but here in Upper Egypt the valley narrows and the cliffs lower to become gentle rock-strewn hills that merge with the Libyan Desert on both sides of the Nile. I cleared Egyptian customs and boarded a Sudanese stern-wheeler ferry boat that went from the dam to Wadi Halfa on the Sudanese border. The Nile behind the dam is called Lake Nasser. I traveled third class, which meant sleeping on the deck. A German lad named Holger Bull, whom I had met in Luxor, was also on the ferry and we ended up traveling together all the way to Kenya. The lights of Abu Simbel came into view just after midnight on December 2lst. It was built by the Pharaohs on the Upper Nile as a temple, with four gigantic stone figures, seated and facing the river. The original site had been flooded by Lake Nasser, but the whole edifice had been dismantled and moved, stone by stone, to the new site above lake level and rebuilt. Giant cranes were still reconstructing the high arch behind the statues. The whole scene was lit by floodlights. I had seen a billboard in the Chicago Loop asking for contributions to “save” Abu Simbel. It was money well spent.

Most of the boat passengers were Sudanese. The most African-looking ones were Nubians and they had three scars on each cheek. All of them were friendly. We arrived in Wadi Halfa around noon, and cleared customs. It was a helter-skelter village of houses made from whatever was available. Eagles walked around town as if they owned it. I think everyone from our boat got on the 3:30 PM train to Khartoum. The first of the famous six cataracts of the Nile had been flooded by Lake Nasser, but we saw several of the others from the train. The Nile narrows at each cataract, sometimes to only a stone’s throw in width, and the water boils through several channels and over rocks. At full flood it would be impossible to navigate, and it was a very dangerous river even at low water. Villages between Wadi Halfa and Khartoum were few, small, and impoverished. The desert crept right up to the Nile’s shores. Our train was pulled by a steam locomotive. It left a trail of black smoke between the white desert sand and the bright blue sky. The contrast between Nature’s stark beauty and the human poverty stirred deep emotions. We arrived in Khartoum at 8:00 PM. I checked into the station hotel and washed my clothes.

December 23rd was a Moslem holy day, so everything closed at noon. I spent the afternoon at the American Library and caught up with world events, located the Catholic Cathedral, and swam out to an island in the Blue Nile. The Blue Nile comes down from Ethiopia and joins the White Nile from the southern Sudan at Khartoum. It is blue because it moves slowly enough for the silt to settle out, so the clear water reflects the blue sky, whereas the White Nile is faster and the silt stays in suspension, giving the water a milky appearance. The Nile is widest here because much water is lost by evaporation farther north and the only tributary north of Khartoum is the Atbara River, which is dammed so that very little of its water enters the Nile.

On Christmas Eve, 24 December l966, I swam across the longest river on Earth at its widest point. First, I went to Khartoum University to say “hello” to Jim Morris, the glass blower in the Materials Science Department at Northwestern University. Jim was setting up a glass blowing shop there, but I learned that he went to Ethiopia on Friday so I just missed him. Then I went to the zoological gardens, where I saw two magnificent white rhinoceroses whose front horns must have been over six feet long. I crossed the bridge over the Nile where the Blue Nile and White Nile meet, and walked along the beach on the east shore until I was at the widest point of the Nile, according to my map. The current was very swift. I wasn’t sure I could swim across and swim back, so I hired a boatman to cross with me in his small boat. It had a lateen-rigged sail typical of boats on the Nile. The boat belonged to his son, whom he left on the beach. A crowd of people joined the boy as we left. It was a long swim. The current carried me a mile downstream, about the width of the Nile at that point.

I was too tired to risk swimming back and being carried another mile downstream by the swift current, so I had the boatman take me back. Only later did I learn why the crowd had gathered. People didn't swim across the Nile here because crocodiles hid in the reeds on the other side. Or so I was told. Most of them left when they saw how far downstream I was being carried by the current. The boatman's son was waiting for us, and they invited me to join their family for supper on the beach. The boatman had been to California and spoke English. We ate and visited until dark. Then I left to attend Midnight Mass at the Cathedral. I had left my clothes on the beach, with my Travelers Cheques. Everything was still there. Islam stresses hospitality toward strangers. Had I done that in Christian Europe, would nothing have been stolen?

Midnight Mass was said by the bishop, who was Italian, along with six priests. The Cathedral had a distinctive African-Oriental architecture which was quite pleasing. Twin staircases on the outside walls led through archways to the balcony and choir loft above. The balcony wrapped around three walls and was supported by pillars wrapped in red velvet. The congregation was a colorful assembly of jet-black Nubians in festive attire, nuns in shining white robes, and Europeans dressed in their Sunday best. The Bishop's sermon was about the family of mankind united in the love of Christ, which is the best birthday gift to give the baby Jesus. I couldn't help but think of the endless civil war in the southern Sudan. Nearly everyone went to Communion. It was and remains the most poignant Christmas Mass of my life.

The jet-black Nubians were the majority at Midnight Mass, although I wrote in my journal that only five percent of them were Christians. Today, after three more decades of civil war and hideous atrocities against them, over half are Christians. They are tall, slender people with a natural grace and dignity. I cannot imagine quenching the red-hot blades of scimitars in their thin bellies to make Damascus steel. Perhaps they were "fattened up" in preparation for the quench. I hope the story Dr. Anderson told in l956 was apocryphal.

I awoke at 8:30 AM on Christmas Day, packed my clothes, and walked to the train station. The train left at 5:00 PM and followed the Blue Nile Valley most of the way to Kassala near the Ethiopian border. Holger Bull joined me. The White Nile south of Khartoum is one of the few places in Africa where animals roamed free, and we hoped that would be true along the Blue Nile as well. All we saw were carcasses here and there on the flat plain. I wrote in my journal, "Tonight was another typical Sudan sunset characterized by that blood-red afterglow that stretches across the western skies as though some parched primeval forest were engulfed in flames beyond the horizon."

We crossed a dam over the Blue Nile at Sennar about 4:00 AM, and by morning the train was passing through the most fertile country I had seen in the Sudan. We followed the Atbara River and eventually crossed it at an irrigation dam that reduced to a trickle the downstream flow toward the Nile. The Atbara is the only tributary river entering the Nile north of Khartoum, so my swim at Khartoum was across the Nile at its fullest. Holger and I had more discussions with both Arab and Nubian Sudanese on the train about the civil war in the south. The Arabs commit the atrocities but they call the Nubians savages. It's not so different from American attitudes during our Indian Wars. We arrived at Kassala, the Sudanese border town, at twilight. A taxi driver took us to a cheap hotel. He said that Ethiopian soldiers had exploded a bomb in Kassala ten days earlier. Another civil war raged in the Ethiopian province of Eritrea, also racial and religious. The Eritreans are Hamitic Moslems and the Ethiopians are Semitic Christians. They live on a remote plateau ten thousand feet high, an isolated Christian island in the sea of Islam. We would pass through Eritrea on our way to Addis Ababa, where Haile Selassie, the Lion of Judah, ruled the Empire of Ethiopia from his lofty rampart. Eritrea is now independent.

I had regarded passage through Ethiopia as a detour around the southern Sudan, which is where I really wanted to go. But my trip through Ethiopia proved to be the most adventurous part of my trek across Africa. The road from Kassala to Tessenei, the border town in Eritrea, was two tire tracks across a

plain through which towering fingers of granite poked into the sky. The plain was strewn with boulders eroded from these granite spires across the centuries. Wild baboons scurried over the rocks. Termite hives also dotted the plain as giant pillars taller than a man. “I never saw the like of it,” concluded the description in my journal.

Our bus came to a fork in the road, one to Asmara and one to Tessenei. Following Yogi Berra’s advice, we took it. We spent the night in Tessenei, and the next morning we took the bus to Asmara, the capital of Eritrea. The bus was stopped repeatedly and everyone was searched, because of terrorist activities. The Ethiopians are smaller and somewhat lighter than the tall Sudanese. They have Arabic facial features and the Nubian frizzy hair. Domesticated Brahma cattle are common in this part of Africa, but we also saw wild antelope from the bus. Palm trees in the Sudan were now being replaced by “monkey bread” trees that look like inverted trees with branches like roots clawing at the air, with few leaves and often clutching gigantic bird nests. The road became asphalt as it climbed into the Ethiopian highlands. Monkey bread trees became rare and towering cactus plants, some over 30 feet high, became common. The colonial Italian influence was strong in Keren, with its landscaped boulevards, whitewashed houses, and flowering trees everywhere. We arrived in Asmara in late afternoon, and checked into a hotel with rooms at 40 cents per night.

The next morning, December 29th, Holger and I took the bus to Bahar Dar, which is near the Blue Nile Falls, the African Niagara. We stopped long enough to sightsee at Axum, the Ethiopian capital of the Queen of Sheba, the city of giant obelisks up to l00 feet tall, and the 800-year-old Cathedral of Saint Mary of Zion, where the Ethiopian kings were crowned. Leaving Axum, our bus descended into the valley of the Atbara River before climbing the Ethiopian plateau.

The bus ride from Axum to Bahar Dar is without equal on planet Earth. The Ethiopian plateau is two miles high, and is dissected on all sides by deep gorges cut by wild, winding rivers. Our bus followed a road up a ridge between two of these gorges. From my journal: “The road zigzagged, twisted, coiled, and writhed as it forced its way up the precipice like some great python struggling up a monstrous tree. Always the summit of the plateau proved to be beyond us still, perhaps at the next terrace, or the next. Meanwhile the view below was staggering, like a view of the Grand Canyon, but more immense, more yawning. Our road was crawling up a great spine between two canyons which cut into the plateau, and each canyon could swallow the Grand Canyon in a single gulp…Great fangs of granite rose precipitously for several thousand feet…behind these towering sentinels rose a vast rampart 10,000 feet high, the great plateau itself, while in the distance rising higher still was Ras Dashan, at l5,l58 feet above sea level, the highest mountain in Ethiopia.”

We reached the crest of the plateau around noon, and found ourselves on a fertile rolling highland of pastures and farmlands. Magnificent Brahma cattle grazed in contentment. Here is a sad entry from my journal: “But the towns are just as squalid as the towns below, and the people just as dirty and prone to eye-disease. “All through the Middle East one finds blindness in one or both eyes a common enough sight. But here in Ethiopia it seems to reach epidemic proportions. Few things tear at the heart more than to see a child with one eye clouded by a cataract and the other inflamed.” Our road entered a basin on the plateau and we stopped in Gondar to change busses. At the intersection of three streets, an enormous monkey bread tree spread its shade like a giant umbrella. I’ll never forget that tree. It was like a mother comforting her children. At the center of the basin lies Lake Tana, where the Blue Nile is born. Bahir Dar is located where the Blue Nile leaves the womb of Lake Tana. We arrived in late afternoon and checked into a cheap hotel. Christmas carols filtered up to our room from the bar downstairs. Ethiopians follow the Julian calendar, so that Christmas is on January 9th in the Gregorian calendar.

Holger Bull and I awoke around 6:00 AM on the last day of l966 and began the 35 kilometer (22 miles) hike to the Blue Nile Falls. Holger was small and slender, with dark red hair and lightly freckled

skin. Although he did calisthenics every morning, in a regimented Germanic fashion, robust he wasn't. He pooped out about l5 kilometers from the falls, and I went on. An English family in a Land Rover was going to the falls and picked him up. The Blue Nile Falls is called the Tissisat Cataract in Ethiopia. It is among the great sights of Africa. The waters of Lake Tana tumble over a precipice 200 feet high along a half-mile-long front, resembling Niagara Falls in height and breadth. The volume of water varies with the season. During my visit, ninety percent of the water cascaded over a broad front in a continuous sheet, flanked by wider fronts over which ten percent fell in individual cataracts. At other times, water cascades over the whole front as one cataract.

Back at Bahar Dar, we discovered that our hotel was a whorehouse. Ethiopian women are very beautiful when they are young and healthy. They wear bright colorful dresses and have milk chocolate skin with a natural reddish glow that contrasts dramatically with their perfect gleaming white teeth, as do the dark iris and white pupils of their eyes. When they are smiling, which they always are, they are absolutely gorgeous. Ethiopian men, by contrast, dress plainly in dull pants and jackets over white shirts. Ethiopians have European facial features. On our way to the Blue Nile Falls, we saw naked boys herding cattle. I never saw a naked girl in Africa. I remember seeing a photo of a bare-breasted African girl, probably in her late teens, in *National Geographic Magazine*, and I saw a few bare-breasted mature women in New Guinea in 1969. Somewhere I have an image of a youth walking hand-in-hand toward the camera with an older woman on one side (his mother?) and a girl (his sister or girlfriend?) about his age on the other side, all smiling broadly. He is thin and bare naked. They have ample figures and wear colorful dresses. All three are good-looking, probably Ethiopian, having European features with dark complexions. Ethiopians living on the high plateau are Christians from apostolic days, and dress modestly. Off the plateau local cultures are often Islamic or influenced by Islam. Marriage is a commercial transaction. Girls and women are literally kept "under wraps" in public and romantic courtship is unknown. Although sodomy is condemned in Islam, it is common. Open courtship with a young woman is the real taboo. I decided Moslem men sodomized boys because young women weren't available, not openly in public. Boys were. Is this why boys can remain naked almost into manhood? Are they "soliciting"? What custom allows a naked teenaged youth to walk hand-in-hand with two clothed women openly in their village?

Holger and I went over to the YMCA that was near the hotel in Bahar Dar. The director was showing a film about South Dakota that featured the devastation by grasshoppers during the Dust Bowl years and ended by showing a Casey Tibbs rodeo in Fort Pierre. What are the odds against my walking into a YMCA in Ethiopia when it is showing a film of a rodeo in my little home town?

We left Bahar Dar for Debra Markos on New Year's Day, and spent the night in a cheap hotel where the beds were made of a mixture of shit and grass covered by wallpaper. It was Sunday, so I went to the Coptic church to attend Mass. A student introduced me to a Coptic priest who was ll0 years old and had lived 6l years in Jerusalem. He was praying a "rosary" of 60 beads. As he touched each bead, he recalled a prayer that he kept in his heart but didn't recite. I showed him my rosary from Jerusalem. We had a long discussion on Bible history, and he recounted how the Ethiopian people were linked to the tribes of Judah. We had passed several crumbling castles in the last few days, and he told us something of their history.

The bus ride from Debra Markos to Addis Ababa was one of the most harrowing of my life. We left at 7:00 AM and by 9:00 AM we were on the rim of the Blue Nile Gorge. People were packed in our bus like sardines. Looking down into the gorge was like looking over the side of an airplane. As the bus descended into the mile-deep gorge on a narrow winding road with no guardrails, climbed the road up the razorback on the opposite side, and went down and up another gorge, the bald tires blew one after the other, the driveshaft rattled and cranked as if it were disconnected, gears ground continuously, and people lurched from side to side with each of endless turns through hairpin curves. As we came to a third chasm,

I told Holger, “I can see headlines in American newspapers tomorrow: Ethiopian bus crashes in canyon. All 537 passengers killed, including one American.”

We were relieved when the bus turned and followed the rim of the canyon. It remained on the plateau all the way to Addis Ababa. Light was fading as we entered the Ethiopian capital. The government buildings and some others were modern and striking, but most houses in this city of 500,000 were made of straight tree branches shoved into the ground close together, with the spaces between branches filled with cow shit. This is the usual construction for houses on the Ethiopian plateau. We passed some white shacks on the way into town and Holger said, “These must be weekend homes for the rich people in Addis.” I added, “Yes, they have painted the shit.” I have noticed that such comments are a way to deal with poverty when it gets overwhelming. Addis Ababa was the poorest capital city I had ever seen. Few countries are more beautiful and have more natural riches combined with such abject poverty as Ethiopia.

I wanted to go overland to Kenya. At a German school near our hotel, Holger and I learned that no busses went into Kenya from Addis Ababa but trucks did. However, Shifta terrorists from Somaliland often mined the road, so it was best to go as part of a convoy. Some Europeans who tried it alone recently were blown up. The heart of Ethiopia is the plateau, where the people are Christians and speak Amhara, a Semitic language. Off the plateau to the south, people are nomadic Moslems who speak the Hamitic language of Somaliland. The aim of their guerrilla war was union of southern Ethiopia with Somalia. The next day, we investigated ways to get from Addis Ababa to Kenya. We could fly, but that was too expensive for us. We could take the train to Djibouti, but then we would have to take our chances on getting a boat to Mombasa on the Kenyan coast. We could take a bus as far south as Negelli. Beyond that was Shifta country where no busses went. Another German, Helmut Sibla, also was willing to try the overland route to Kenya. Helmut was a sturdy Rhinelander with blue eyes and wavy blond hair and an outgoing carefree personality. He patronized every whorehouse. Holger never did. He was private and taciturn. His only interest in other people was confined to drawings of them he kept in a sketchbook. He sketched me. I occasionally sketched people too, but I gave them my sketches. The three of us left by bus at 7:30 AM on 4 January 1967. It passed through Shashamanna and entered Wando, where we spent the night in one of the bar-café-hotel-whorehouses that are common in Ethiopia.

The bus to Negelli left the next morning at 9:00 AM. It was filled mostly with schoolboys who were taught by Peace Corps volunteers. They quizzed me about the Vietnam war and capitalism versus communism as a way to develop countries like Ethiopia. They were proud that Ethiopia had never been a European colony, apart from the brief conquest by Italy under Mussolini, but I noted that most of the good roads and buildings were constructed during that time. The road south of Wando climbed steadily through heavily forested hill country. As the climate became more arid, the towering cactus plants I had seen north of the plateau began to reappear, along with camels and many termite mounds that rose like tall red chimneys, some fifteen feet high, from the red earth. The gravel road became two tire tracks as we entered the nomadic herding country of the Shiftas. We arrived in Negelli shortly before 6:00 PM. It was an armed camp. The highest hill was crowned with a walled fort. A canopied open-air market occupied a large open square, around which houses were clustered. Negelli had an airport and a radio station. Everyone had to be off the streets by sundown. We checked into one of the bar-café-hotel-brothels.

The next day, Helmut and I walked up to the fort to see about joining a truck convoy to Moyale in Kenya. The colonel in charge told us we could go with a convoy leaving on Monday. We went back and spent the day playing cards with Holger Bull. Helmut and Holger are both Germans, but they couldn’t be more different. Apart from the physical difference (Helmut was robust; Holger was slight), Helmut was a fair-haired happy-go-lucky Rhinelander who was screwing the Ethiopian girls in every whorehouse, whereas Holger was a sullen loner who had escaped from East Berlin just before the wall went up. Holger was also incredibly cheap. We played canasta, with the loser buying the winner a cup of tea that cost six

American cents. After losing five games, Holger announced, “I buy no more tea!” Sure enough, when he lost the next game, he refused to buy tea for the winner. He was 23 and a professed atheist. He couldn’t understand why I didn’t eat meat on Friday. Helmut and I were talking about World War II on one occasion. Holger just listened. He had said, “I hate Germans.”, but after listening to us he said, “Is true. Ve lost Vorld Var Vun. Und is also true, ve lost Vorld Var Two. But next time, **ve vill vin!** Und if ve lose, ve take ze **whole vorld** vit us!” End of discussion. It was clear that Holger didn’t hate Germans, he hated the fact that they lost!

The next morning, 7 January 1967, was Ethiopian Christmas, and we got a nice present. A truck was leaving for Moyale within the hour. It was a flatbed loaded with barrels of kerosene, big sacks of US surplus wheat, and some 25 Ethiopians. The road quickly degenerated into two tire tracks through the bush. Ten kilometers out of Negelli, we picked up a US Air Force officer named Wayne Beard. He and three other Americans were mapping Ethiopia from the air and the kerosene barrels were fuel for their jet planes. Their air photos were used in mapping and also to locate encampments of Shifta terrorists. Wayne said the Shiftas mine this road to blow up trucks like ours, and in the last months 25 had been blown up. On his last trip to Moyale, the truck just ahead of his in the convoy blew up, and we weren’t part of a convoy. Then one of our truck tires blew and a pin sheared in the steering mechanism, so we had to spend the night in the middle of Shifta country. Be that as it may, the trip from Negelli to Moyale along that track through the bush was my poor-man’s safari. We saw most of the big African game animals in their wild habitat, what I had hoped to see in the southern Sudan, we camped under the stars of the clear African night, and we listened to the wild animals scream and roar in the darkness, while our armed guard kept a lonely vigil on the lookout for lions and Shiftas.

All the next day, Sunday, we passed roving bands of Shiftas armed with spears. Some had rifles. Our truck lurched up and down hills and arroyos with many sharp turns, every one throwing ten tons of weight onto the bald front tires, the springs, and axle. Other tires blew and pins sheared. As our mechanic made makeshift repairs, usually in some arroyo, armed Shiftas quickly gathered and looked down on us like vultures, watching and waiting. During one such stop, Helmut and I wandered off into the bush and came upon a camel, some cattle, and two grass huts. A woman emerged with her two children and offered us water from a clay jug.

On the third day, we chased a giraffe down the road and saw big game animals all day. We stopped to unload the truck before it crossed a bridge over a gorge. The bridge had been weakened by a mine that had exploded when an earlier truck crossed it. Helmut and I took a swim in the river at the bottom of the gorge. I washed my clothes in the swift current. It became rapids and a waterfall a little farther on. Around midday, our truck passed under some trees hanging with rotting meat. Further on, we saw the mangled wreckage of a troop truck covered with gore. Late in the afternoon, we arrived at Wachelli, which looked like a stockade fort from a John Ford western. Some two dozen horses grazed in the area that had been cleared of bush around the fort. There we learned what had happened. The Shiftas had mined the road, intending to blow up our truck, but nomads use the truck trail to herd their cattle because it is easier going, and a herd of eight cattle had detonated the mine before our truck arrived. The Shiftas whipped the cattle drover to teach him a lesson, and left him tied to a tree. The explosion was heard from the fort, so the troop truck went to investigate. While the soldiers freed the drover, the Shiftas circled ahead and mined the road between the troop truck and the fort. When the troop truck returned it detonated the mine. Five soldiers were killed. Thank God for the blown tires and sheared pins. They delayed our trip and saved our lives. When we arrived at Wachelli, our front axle was tied to the truck frame by rope. A thick layer of white dust hovered over the land in the fading light. I wrote in my journal, “Camels moved through this fog-like world like specters, their heads and necks like periscopes above the ocean of dust.”

We were up at sunrise, and by l0:00 AM we were loaded and on our way to Mega. Our truck

stopped at a schoolhouse in the wilderness. The school children showed us a huge meteorite crater nearby. It was l000 feet deep and a mile wide at the top. Later in the day we crossed a ridge of hills that was also a climate divide between the arid Shifta bush country and more fertile country to the south. A crumbling fortress which had been built on the ridge crest by the Italians was still in use. Beyond the fortress, a narrow pass opened onto a broad fertile plain framed by mountains on the distant horizon. The village of Mega lay in a bowl-shaped valley and glowed in the fading daylight. The Moslem men were having a celebration, chanting and pounding drums inside their mosque. Their women were looking in from outside. Helmut managed to seduce one of them. The rest of us spent the night on the truck, as there were no hotels in Mega.

We left Mega at dawn and crossed the fertile plain dotted with zebras and ostriches. Mega had been laid out like an Italian town, and its streets were once paved. The usual town in this part of Ethiopia was built around a central pentagon-shaped open market, from which streets radiated at the corners. The truck owner exchanged bags of US surplus corn and grain for wild animal skins and domestic goats at these towns. The goats were butchered and eaten along the way. Wayne would talk with Ethiopian army officers at some of these towns, and sometimes I listened in. Venereal disease is a scourge in Ethiopia. It has become entrenched in families because of endemic prostitution, and causes most of the blindness I saw. When asked how the prostitutes avoid pregnancy, one Ethiopian replied, “How can grass grow on a trail?” Still, grass manages to grow. The many blind children are proof of that. We arrived in Moyale late in the day. Inside a bar they discussed Ethiopia’s problems into the evening hours, and it all went into my journal.

Moyale was two towns, one in Ethiopia and one in Kenya, with l00 yards of grazing land in between. I crossed the border the next morning, on l2 January l967. Both Moyales had hospitals, but Moyale in Kenya was cleaner. Many of its buildings were whitewashed. It was a Moslem feast day. The children wore brightly colored clothes, and they danced in the streets. Shifta terrorists are also active in this part of Kenya, so we weren’t allowed to travel overland to Nairobi. I was told that Red China was arming the Shiftas in both countries. Wayne stayed in Moyale in Ethiopia to finish his mapping mission. Helmut, Holger, and I took a Beechcraft Bonanza to Nairobi. It flew low and landed at villages along the way. The landscape was dry and over large areas it was covered with twisting lava flows and spattered with volcanic craters. We flew close by Mount Kenya, with its forested slopes and ice-clad summit virtually on the Equator. The climate changed dramatically from there on, with fertile farmlands as far as the eye could see all the way to Nairobi. These were the White Highlands settled by the British in colonial days. Owing to many decades of colonial rule, Nairobi was a modern city in almost every way, in stark contrast to Addis Ababa. Most cars were driven by Europeans and most shopkeepers were Indians. We checked into a youth hostel about seven miles from downtown Nairobi.

I parted company with Helmut and Holger in Nairobi. I wandered around town on Saturday and attended Mass at the Cathedral on Sunday. The congregation was half black and half white, and the priest was Irish. On Monday, an eighteen-year-old American named Arthur and I left the youth hostel to climb Mount Kilimanjaro from the Kenyan side. We planned to descend from the Tanzanian side. Arthur was a New Yorker of Portuguese descent. We bought minimal camping equipment in Nairobi. We hitch-hiked and caught a ride most of the way with a Briton driving to Mombasa on the coast. He was a White Hunter who had led many safaris and was also a farmer in the White Highlands. I was reminded of the movie, *Mogambo*, in which Clark Gable was a White Hunter leading a safari for an English scientist who wanted to study mountain gorillas. Grace Kelly was the scientist’s wife and she falls for Clark, who ditches his jungle maiden, Ava Gardner, to pursue her. Then Clark comes to his senses and arranges for Grace to find him in Ava’s embrace. Grace feels betrayed and Clark tells her, “Don’t tell me you didn’t know. The White Hunter gets the girl. It’s in all the books.” Years later, in the 18 November 1998 *Star* magazine, a “Flashback” story, “Grace and Gable Sizzle in the Jungle,” showed Clark eying Grace, both in canvas

chairs, and Grace with a “come hither” look. Life imitated art.

Cattle and antelope grazed together on the large ranches between Nairobi and Loitokitok. One British rancher gave us a ride. As we passed through game reserves where elephants and giraffes roamed close to the road, he told us stories about elephant intelligence. He said when herds are culled in the game reserves to prevent overgrazing, every elephant in a herd must be killed because the survivors will remember and take revenge. The “monkey bread” trees in Ethiopia are called “elephant bread” trees in Kenya because elephants break into the fat tree trunks to drink the water stored inside. The last leg of our trip to Loitokitok was with an Indian Christian who invited us to spend the night with his family. The next morning he took us to Loitokitok, a Masai village, and to the Outward Bound Mountaineer’s School nearby. There, a Scot gave us pointers on the three-day climb to the summit of Kilimanjaro. The Kenya trail was poorly marked, steep, and seldom used. All the guidebooks recommended the gentler Tanzania trail, guides, and porters for inexperienced climbers. We had two feet each, five days of meager rations, and no experience. We began our climb that morning, l9 January l967.

I had made a sketch map of the trail from the big wall map at the Outward Bound school. We got lost in a cornfield, but friendly Masai put us right. We entered the forest for the gentle part of the climb called “the walk” and followed blaze marks on the trees. We stopped for lunch at a babbling brook. Trees got shorter and grass got taller on the trail beyond the brook. As the trail steepened, Arthur began running out of gas and calling for frequent stops. By 4:00 PM, I looked back and saw the forest far below. Bare rocks began outcropping through the grass and the trail became more obscure. I waited for Arthur to catch up. He was practically crawling. I took his backpack and he still couldn’t keep up, even though I was packing from 80 to l00 pounds on my back. We climbed for an hour in the rain until I finally found one of the caves on the trail map. We spent the night there. By 9:00 AM we were on the trail again. By now it was marked only by occasional stone cairns and it was much steeper. We had to climb more slowly for safety and to avoid missing cairns. Clouds obscured the forest behind us, but the sky was clear ahead. Around noontime, I found another cave. Arthur was already far behind. I wrote in my journal, “As the sun heated up the air, the cloud layer that obscured the base of the mountain, and was like an endless sea around the mountain, began to rise, and streams of fog were already sending smoky fingers up the draws.” Arthur finally arrived and we both entered the cave and fell asleep.

I awoke in mid-afternoon and found that the fog had lifted somewhat. Arthur was still asleep, so I decided I would go out and scout ahead to locate markers on a trail that had all but disappeared and a stream that was on my sketch map. After an hour of crossing dried-up washes and ravines, but no water, I found trail markers leading up a gravel streambed. Then the fog suddenly closed in like a silent vise. I quickly began to return to the cave but the rock cairns were too far apart to find them in the fog. I reckoned I was about a half-mile from the cave. Here is the entry in my journal: “I gradually realized that I was lost. The cold fog now surrounded me like a shroud and I could barely see the dim shapes of rocks just ahead of me. It was then that I began to feel the wild terror of panic sweep through my bones. I knew I should stay still and wait the fog out, but I darted about hoping to find some familiar outcrop, a footprint, anything. Finally sanity returned and I climbed a high rock and began calling to Art…After 20 minutes of calling, Art finally began answering and I followed his voice back to the cave. He said he had been dreaming, that he was at a party and I was calling to him from somewhere in the crowd. A crowded party! How far from reality that was! It was a terrifying feeling to be lost in the clouds 13,000 feet above sea level with the cold creeping in and only a person fast asleep in some cave to lead you to safety! It was 5 PM before he finally answered my calls, and I was damp to the skin by the heavy clouds. By 6 PM the clouds began to lift, and there was Kibo, looking so close and solitary that it seemed but a stone’s throw away.” Actually, it was another two-day hike to the top of Kibo, the higher of the two summits of Kilimanjaro.

We were up at dawn. Kibo glowed in the morning light. We made better time because I had hiked

ahead yesterday afternoon to find the trail. We found the fork in the trail where one branch went to Mawenzi, the lower of the twin summits, and one branch continuing on to Kibo. We took the trail toward Kibo. The trail leveled off as we approached the broad saddle between the Kibo and Mawenzi summits. Nothing grew here. The saddle was littered with lumps of lava. Kilimanjaro is a volcano. Then we discovered we were on the trail to Mawenzi, not Kibo! We saw a flash of sunlight reflecting from Kibo Hut at the base of Kibo, and began at once hiking toward it, even though there was no trail. Both summits were magnificent and totally different. "Mawenzi rose swiftly and sharply to a series of needle sharp minarets strung across the summit like dragon's teeth. Steep earth slides and glistening snowfields reached up between the craggy spires like great claws trying to pull them down. But Kibo was like a huge rounded loaf, crowned by a gigantic glacier which hung over the edges of the volcanic cone like a huge skullcap, threatening to send huge blocks of ice breaking away and crashing down the barren slopes." That was from my journal.

I continued on to Kibo Hut, where I met some climbers who had come up the Tanzania trail and were returning from the summit. One was 50 and had lost a lung in World War II. I rested, waiting for Art, but he never arrived. I hiked back down onto the saddle between Kibo and Mawenzi and found him flat on his face, barely conscious. I threw him over my shoulder and carried him to Kibo Hut 15,530 feet above sea level. Rising clouds closed around the hut just as I arrived. Had I left for Art even a half hour later, I would have been lost again in the clouds. An Ethiopian, Croatian, and two Bavarians were at the hut with their Tanzanian guide. They planned to begin the climb to the Kibo summit the next morning. They agreed to let me join them.

We began the climb at 1:30 AM on Sunday, 22 January l967. Art stayed at Kibo Hut. After an hour's climb, one of the Bavarians vomited. The Croatian called for more frequent rests, and also vomited. The path zigzagged up the side of Kibo and as we climbed even the summit of Mawenzi fell away below us. From my journal: "Then about 5:30 great shafts of pink light appeared like a fan across the eastern horizon—the magnificent prelude to dawn. Gradually the shafts merged and the dark background grew lighter until the whole eastern sky was aglow. Then, like a pool of molten steel, the sun appeared as a fiery boat riding on the edge of the low-lying clouds. And as it rose, the pink aura vanished and long shadows appeared across the land. It was dawn."

The zigzag trail narrowed as we approached the summit, until we found ourselves passing through a cleft between icy rocky ledges. Beyond the cleft, an immense canyon opened up before us. We were on the outer rim of Kibo crater looking down 1000 feet to the inner crater. We continued along the rim to a bronze plaque, Uhuru Point—freedom point—the top of Africa, 19,340 feet above sea level. Looking down from this height, other mountain ranges seemed like faint wrinkles on the face of Africa. The outer cone was crowned by a wall of ice l00 feet high that "rested like a garland of glaciers on the head of some frozen giant" (from my journal). The inner cone was barren and ice free, proving that it was warm. Kilimanjaro was not an extinct volcano, it was merely dormant.

Seeing the clouds creeping up the slopes below us, we began our descent in haste. I stopped only long enough to collect some snow for Arthur, whose canteen was empty. When we got to Kibo Hut, Art had adjusted sufficiently to the altitude to join my descent down Tanzania trail. We left the others at Kibo Hut and passed many others coming up with their porters. Tanzania trail was a superhighway compared to Kenya trail, which was hardly a trail at all. I went on ahead of Art and came across a brook, where I filled my canteen. It was the first running water I had seen in three days. Peter's Hut, our overnight rest stop, soon appeared in a watered glen among strange cactus plants that looked like a cluster of fireplugs. Art and I finished the last of our bread and honey that was our only food for the whole climb. The Ethiopian, Croatian, and Bavarians rejoined us with their private porter, who then laid out a sumptuous cooked meal for them served on a checkered tablecloth. Art and I crawled into our sleeping bags. We were still far above the tree line.

The Ethiopian and Croatian were diplomats. We all hiked down to Marangu Hut the next day. The Bavarians had promised to give Art and me a ride from there to Moshi. When we got to the hut, the diplomats asked if they could ride too. Since the car had room for only two passengers, they got the ride. It was over l5 miles to Moshi. Art and I began walking. We ate our first warm meal in a week at Moshi and spent the night at a Sikh temple that had free lodging in the courtyard, where we could wash our clothes and take showers. It was great!

It took Art and me two days to hitchhike from Moshi to Dar es Salaam, the capital of Tanzania. It lacked the size and bustle of Nairobi. Although the wide boulevards were beautifully landscaped, it seemed like a lazy seaport town. Palm trees waved in the breezes coming off the Indian Ocean. The climate was much hotter than in Nairobi, so we slept on the beach behind the large white Catholic church on the bay. The next morning, I took a swim in the Indian Ocean and put on my best clothes before going to the Zambian and Congolese embassies to ask about getting visas. Art wanted to go to Mozambique, because it was still a Portuguese colony and Art had Portuguese parents. I learned that getting a Zambian visa took two months, and that I should get a Congolese visa in Kigoma, a town on Lake Tanganyika. The train to Kigoma left at 2:00 PM and I was on it. The train was pulled by a steam engine, which was common in Africa, and it passed through lush, rolling country that was sparsely inhabited. Villages dotted the railroad line, and villagers came out to sell their wares when the train stopped. It was a two-day trip and my train arrived at 9:00 AM on 28 January l967. The large train station was on the lake shore and a picturesque Catholic church overlooked the town. Ujiji, the village where Stanley met Livingstone, was just a short distance south of Kigoma. Kigoma had paved streets, tidy houses, lush gardens and a large open-air market, but no Congolese embassy where I could get a visa.

After getting the runaround by immigration officials, I met a young Greek lad, only 22, who owned a barge on Lake Tanganyika. He told me that I could get a Congolese visa in Usumbura, the capital of Burundi, on the north shore of Lake Tanganyika, and that he would take me there on his barge even though I didn't have a visa to enter Burundi. He offered me a bed in his own cabin. The next morning was Sunday. I walked up to the Catholic church and caught the 10:00 AM Mass. The church was shaped like a cross, with the altar in the center and the congregation seated in the arms of the cross. The Mass was said and sung in Swahili. The priest was white but virtually the entire congregation was black. I walked down to the barge after Mass and got into a long conversation with the Greek. He spoke four languages, and paid his African crew according to how big a family each crewman had. Nobody resented that. His name was Gabriel Markides, and he was well-liked by his crew.

The cargo of salt was loaded on the barge on Monday morning. Gabriel got word that the government had fallen in Usumbura and it wouldn't be safe for me to go there without a visa. Later a friend radioed him from Usumbura and said the government was secure. Gabriel said he would take me and the barge left in mid-afternoon. Lake Tanganyika, like Lake Baikal in Siberia, is long, narrow, deep, and ringed by low mountains. The lake turned to gold as the African sun set behind the western mountains. Gabriel's brother met the barge at dockside in Usumbura, and he quickly whisked me to the American Embassy in his Citroen. There I got a seven-day Burundi visa. An embassy official told me the government was unstable because it was Watusi. They are l5 percent of the population, which is 85 percent Bahutu. About 25,000 Batwa pygmies live in the forest as primitive hunters. Burundi is the home of the extremes in height of human populations. Watusi men are mostly between 6 and 7 feet tall. Most Americans became aware of them in the Hollywood movie, *King Solomon's Mines*.

I went to the Congolese embassy and applied for a visa, and then began looking for a place to stay until the visa arrived. I met two American Mennonites, Menno and Max, who agreed to let me stay with them at their mission. I learned that the Watusi now running Burundi had been run out by the Bahutu in Rwanda. Dead bodies littered the streets in Usumbura during the fighting and were left to rot in the hot sun, but the corpses had been mostly removed by the time I arrived. Rwanda and Burundi are two small

countries in the Great African Rift Valleys. They and the Congo had been part of the old Belgian Congo that had been ruled with great cruelty by King Leopold of Belgium in the last century. Joseph Conrad described conditions in *Heart of Darkness*. French remained the language of officialdom in all three countries after independence.

I spent the next three weeks trying to get extensions for my Burundi visa, get a visa for the Congo, avoiding the 22 percent "service" charge for changing money at the bank, fighting a jaw infection and body itch, getting to know the various Protestant evangelicals who worked with the Mennonites to distribute food and medicine, attending their church services, and also attending Mass at the big Catholic Cathedral. The Catholic Belgian missionaries had made much more progress in spreading the faith than had the evangelicals, and about 40 percent of Burundians were Catholics. I stayed with the Mennonites at the Protestant mission the whole time. Only a handful attended their services, and all were white. On one occasion, Cyril Punt, an English bachelor who had lived in Africa for 30 years, attended the service. He was 68 and still had jet black hair. He was a Plymouth Brethren. He led the congregation of four in what I thought was the most fervent rendition of *Nearer my God to Thee* since it was sung on the sinking deck of the *Titanic* in l9l2. Mr. Punt also delivered the sermon. He said once John Wesley confessed to a Moravian Brethren that he had lost the Faith. "Preach it until you get it!" was the reply.

The center of Protestant missionary activity in Burundi was Radio Cordac, where I first met Menno and Max. Seven denominations from America, Britain, Denmark, and Sweden participated. I had told Menno and Max about my travels through Russia and the Middle East. The word went out and Tim Kirkpatrick, head of Radio Cordac, told me that all the missionaries wanted me to give a talk about the church in Russia. It was well attended and I talked for over an hour. They saw the situation in the Soviet Union and the Middle East through the prism of Bible prophecy. One man said the Catholic Church was the Scarlet Whore of Babylon. I told him that I had been in Babylon in November and no whores were there, scarlet or otherwise. Only hoot owls lived there, as prophesied in the Bible. One family, the Rileys, were from South Africa.

After I returned from the Sunday Mass at the Cathedral on 5 February l967, Mrs. Riley asked me what my religious affiliation was. I told her I was a Catholic, like every good Irishman. I suppose I should have been ashamed of myself, because all of these Protestants were very good people, the salt of the earth. I got my come-uppance several days later. The Hedges from the World Gospel Mission dropped in, and got into an animated discussion about the Plymouth Brethren doctrine of "once saved, always saved." Mrs. Hedge wanted to know what my faith was and I told her. Her eighteen-year-old son, Ross, shared my bedroom that night. He asked me lots of questions about Catholics, including, "Do Catholic Fathers (meaning priests) have to become Christians?"

The next day was St. Valentine's Day. I had told Ross it was the day before my birthday. That evening, Menno and Max held a barbecue for the Hodges. I was floored when Mrs. Riley brought out a birthday cake with 29 candles. Ross had passed the word. It was the first birthday cake I had had in ten years. The last one had been baked by Maw, the year she died.

Events started moving fast on my birthday, l5 February l967. Burundi immigration refused to renew my visa, so I went to the Markides office and Gabriel arranged to have another Greek sell me a ticket to Stanleyville in the Congo. With that ticket, the Congolese embassy told me I could pick up a visa the next morning, which I did. My various ailments had cleared up, and that evening I treated Menno and Max to a steak dinner at the Burundi Palace Hotel, the class place in town. It was Friday so I ate fish. Five missionary ladies who worked up-country joined us. It was a gay time. On Sunday, l9 February l967, I went to the African Mass at the Cathedral, the English service at Radio Cordac, and spent my last night with the Mennonites. The next morning a Watusi girl took me to the airport and I boarded a twin-engine DC-3. It flew up the Great Rift Valley with mountains on both sides and landed in Bukaru, a town in

Rwanda at the southern tip of Lake Kivu. There I met an Englishman, Dave Williams, with his mother and young son. They were also going to Goma in the eastern Congo, where he operated a tea plantation in the hinterland. We flew over hilly terrain to Goma. It was nestled between two active volcanoes with perfect cones. Dave said they erupt in sequence about every ten years. The last time was in l958, so another eruption was imminent.

The immigration people didn't believe I was the one in my passport photo. That person was a fat slob. They let me in anyway. Dave Williams took me to the hotel, treated me to dinner, and insisted I share his room to cut the cost in half. He shared his views of Belgians, Greeks, and Congolese, none of whom he liked. He said Belgians were "the most ignoble race alive…they look for the worst in people, don't trust anyone, and won't part with a franc." He said they imparted these attitudes to the Congolese. Then they pulled out, leaving no Congolese trained to run the infrastructure of the country. Graft and corruption were rampant. As a result, I should never let them know how much money I carried and a bribe would get me out of most fixes. This was the country I waited three weeks in Usumbura to get into. It was 20 February l967.

The next morning I had breakfast with Dave Williams, and asked him about the white mercenaries who were hired by the Congolese government to fight the guerrilla rebels of Patrice Lumumba that had just been driven out of Stanleyville, where I was headed. Here is what I wrote in my Journal: "He said that they are an odd lot, from all over Europe, a few Americans, many are Belgians who had members of their families killed, and several are South African 'volunteers'. Most are misfits and just like to kill—it doesn't matter who. All carry some kind of chip on their shoulders. One he saw was a young Italian count with the face of an angel, but the other mercenaries referred to him as 'the killer'."

The four-engine plane took off for Stanleyville at 10:00 AM. I wrote in my Journal, "Then clouds obscured the view and when they cleared we were over the jungle of the Congo Basin. The terrain looked quite flat and only an occasional clearing in the endless sea of treetops gave evidence of inhabitation. Lonely, meandering rivers wound aimlessly through the vast carpet of green, and in its own way the terrain below looked as fatal as the Kara Kum desert in Turkmenia. A man down there would never see sun nor stars by which to chart his way, and the rivers were an uncharted maze of loops and bends. This was tropical rain forest—growth so dense the sky is never seen, and only faint diffuse light filters through to the jungle floor."

When a large river appeared in the west, our plane followed it. It was the Congo, the river that drained the darkest heart of the Dark Continent. When the Congo broke up into rapids, I knew we were at Stanley Falls, where the end of upriver navigation gave birth to the town of Stanleyville, renamed Kisangani after independence. It looked pleasant enough from the air, well laid out with suburbs, but the jungle crowded in from all sides. It was very hot when we landed. Immigration took my passport, so I wandered the city without identification. With the help of an Indian on my flight, I got a room at a hotel owned by another Indian named Walji, who had a Congolese staff. Indian businessmen with African employees were common in East Africa. Anxiety had been my constant companion in Africa. It set in again when I discovered that my Congolese visa would expire before the next river boat left for Kinshasa, which was the Congolese capital and was 1500 miles downriver. It was originally Leopoldville, named after the brutal Belgian king who ruled the Congo as his personal slave labor camp in the nineteenth century. It didn't take long for the usual uncertainty about everything to assert itself.

The next day, 22 February l967, was one of frustrations. The day before, I had presented my situation to a Major Gague at a nearby hotel for foreign military people. He said he would help. We went to the ticket office for the Congo River steamers, to Surete (the security police), and to Immigration. No luck anywhere. I got my passport back, but couldn't get my visa extended to take the next steamer. Flying to Kinshasa would foreclose the whole purpose of entering the Congo, which was to go down the Congo

River on a river steamer. Mr. Walji and Major Gague devised a plan to get me on the boat. The next day, all three of us would visit the Congolese immigration officers, the Major in full dress uniform. He would argue that I was a student interested in the rain forest, so I had to see it close up, not from an airplane, that I didn't have money enough to fly, and this would be an act of kindness that he would remember. It worked! Back at his hotel, Major Gague said, "Did you see how they reacted to the uniform?"

Eight days passed before the river steamer arrived, after some delays. I spent the time walking through Kisangani and getting to know the Walji family at the hotel. He and his wife had a four-year-old son and they treated me like a son. During that time, their son got a touch of malaria and they discovered he had insects in his stomach. Mr. Walji had lived here for 30 years, but in the last two years life had become almost impossible for merchants like him. They were mostly Indians, Greeks, Portuguese, and a few Jews. His hotel was robbed twice while I was there, 12,000 francs the first time and 150,000 francs along with his wife's jewelry the second time. Everyone lived in apprehension and fear. Several pages of my journal describe those eight days, and my conversations with Mr. Walji, Major Gague, and others, as I tried to capture the horror.

Let me attempt a bare-bones account. The Congolese people had been incredibly brutalized by King Leopold of Belgium in the nineteenth century. He was a Christian monarch in Europe and a Hitler in Africa. The Belgians established an infrastructure of commerce and transportation during the period of colonial rule, but trained no Congolese in how to maintain it after independence. Nor did the Belgians provide training in self-government. Only Catholic missionaries provided education and medical care. The Congo descended into civil war shortly after independence. In l965, Patrice Lumumba and his Simba rebels captured Kisangani and weren't crushed until l966. Nearly all foreign-owned businesses were looted and their buildings were burned. I walked through the blackened shells during my l967 visit. Some Europeans were captured, butchered, and their meat was sold on open tables in the native marketplace of Kisangani. The surrounding fields and groves were destroyed. Hundreds of dead bodies littered the streets and were left to rot in the Equatorial sun. The Simbas were armed by the Red Chinese, who were also supplying arms to guerrillas in the Sudan, Ethiopia, Uganda, Rwanda, and Burundi in a continent-wide uprising. I had just passed through those countries, all but Uganda, and heard many eyewitness accounts of the carnage, and seen it myself close up and personal.

In the Congo, Simba rebels were active in Oriental, Kiva, and Katanga provinces. Joseph Mobutu seized power in Kinshasa and hired foreign white mercenaries to recapture the provinces. They were from many countries and the dregs of the Earth. All of them thought the native Africans were "monkeys" or "apes." The Boer mercenaries from South Africa called them Kafirs. These mercenaries "kept the peace" while I was in Kisangani. I ran into some of them at the Olympia Hotel, which was near the African market and was the swinging joint in the city. Colored lights were strung through the trees outside, where there were drinking tables, a dance band heavy on African drums, and a concrete dance floor. Scantily clad African dancers were painted on the wall. I learned that people had indeed descended into cannibalism when the crops were destroyed outside the city, and that both "dark" and "white" meat were available in the native market. An Englishman told me, "The best was Simba boys from l2 to l6 years old." Veal. I overheard three South African Boers at one table joke about an incident while they were patrolling one of the jungle trails outside the city. A Congolese boy came down the path on his bicycle. One of the Boers whipped up his machine gun and blasted the boy out of the saddle. He was dead before he hit the ground. When asked why he did it, the Boer said, "I'll be damned if that little Kafir gets to ride when I have to walk!" They all laughed.

Stanleyville, named after Henry Stanley who "found" David Livingstone, had been renamed Kisangani after independence. His famous greeting, "Dr. Livingstone, I presume," sounds so elegant. But Stanley shot and killed Congolese "for sport" from his boat on Lake Tanganyika. So changing the name didn't change the "sport" of white "hunters" killing black people as if they were game animals. The

Congo was still the Heart of Darkness.

One Major Cassidy walked into the saloon, put his machine gun up the nose of one of his compadres at the bar, fired a burst, then turned around and ordered a drink. They despised missionaries, as they thought the Africans couldn't be civilized and would never make good Christians. Like them? I wrote in my journal, "better a bad Christian than a good cannibal," but the Englishman seemed to be both.

If I had to sum it up in two words, they would be what Joseph Conrad put in the mouth of Colonel Kurtz in *The Heart of Darkness*: "The horror. The horror."

Major Gague and the other Americans had no connection with the white mercenaries. They were ordnance men in the U.S. Army training the Congolese soldiers how to drive and maintain military vehicles. The large Catholic church survived in the midst of the devastation. Because of all the carnage and anxiety, I had gone there repeatedly to pray that I would somehow be able to make the trip down the Congo River to Kinshasa. Sunday Mass on 26 February l967 was well attended by Congolese. The priests were White Fathers. Somehow, civilization was hanging on.

Thanks to the persistence of Mr. Walji, despite his own troubles, I had a first class cabin that cost twenty dollars when the river steamer pulled away from the dock at Kisangani about 5:30 PM on 2 March l967. The steamer was named the *Gouverneur Mouleart*. It had a gigantic paddle wheel on each side and looked every inch like one of the Mississippi River steamboats of the nineteenth century. The steamer pushed a large barge loaded with people, cases of beer, fuel drums, and some vehicles. I wrote in my journal, "I had moved Earth to make this trip and, as I stood by the rail watching the golden sun fall behind the jungle, leaving a golden trace on the water, I knew that by my prayers I had moved Heaven too."

Supper began at 7:30 PM. The dining salon had beautiful red-stained mahogany paneling and seated about fifty people. It was on the third deck below the captain's half-deck, and was separated from the bar by a serving kitchen that was situated between side parlors. We were served vegetable soup, roast pork, and boiled potatoes. No dessert. That turned out to be the usual meal for the whole trip. It was simple fare, but tasty. After supper, I lounged in a hammock on the deluxe deck and watched the spotlights from the captain's half-deck play across the water and shoreline, searching for buoys that marked the deepest part of the river channel. The other passengers were a varied lot. One had a seven-foot live alligator trussed to a pole. I retired at 9:00 PM. My cabin had two beds, a sink, and closet, ceiling nozzles that played cool air onto the beds, and a tiled bathroom shared with the neighboring cabin. The next morning, as I was relaxing on the deluxe deck after breakfast, some officers appeared, checked my ticket, and escorted me to the first class deck.

We passed a native village where houses were constructed from slender poles and arrived at Elizabetha at noon, where the steamer stopped and people traded for an hour and a half. It was a factory town, with two nice-looking houses on a hill overlooking the river. I suppose the owners or managers lived there. We continued down river. About 5:00 PM, five wooden canoes propelled by Congolese standing up and stroking the water with long, thin paddles came alongside the steamer. The canoes were loaded with firewood, dried fish cooked black outside and yellow inside, about l8 inches long, fresh catfish two to three feet long and weighing 25 to 50 pounds, and a pan full of huge grubs. The canoes appeared from nowhere and they traded their goods with the third-class passengers and people on the barges. I visited with a Belgian. He told me the Congolese had no sense of time. Their language, Lingala, had a word for "now' and a word for "other times." That was why they often didn't show up to work. Work wasn't "now." In East Africa, Swahili is the main language, especially for commerce.

The Congolese are quite different from the East Africans, who are mixed with Hamites and often

combine Caucasian facial features with dark African skin. Whereas the Sudanese and Watusi are tall and skinny, the Congolese are much shorter and many of the men are extremely muscular. Women are about as tall as men and tend to be fat. The Congolese look more like what Americans would call Negroes, with broad noses and high cheekbones, so I suppose they are related to the West Africans who were shipped to the New World in slave ships. I began to see the Congo as playing a unifying role in Africa similar to that played by the Holy Roman Empire that was ruled by German emperors after the breakup of Charlemagne's empire in 843 AD. As that empire occupied the heart of Europe and had Latin as the language of learning amid numerous German dialects, the Congo occupies the heart of Africa and French is the language of learning amid numerous Bantu dialects. In the Holy Roman Empire, a new society was constructed on the ruins of the Roman Empire by bringing Christianity to tribal people. In the Congo, that society is being constructed on the ruins of a colonial empire. The Holy Roman Empire did not succeed in creating an enduring Christian nation in the heart of Europe, but a Christian Congo may endure in the heart of Africa. The reason is geography. The Holy Roman Empire was divided by geography, with the Rhine cutting across the west and the Alps cutting across the south, giving birth to France and Italy. The Congo is united by geography. The Congo River and its tributaries reach into every corner of the country, and draw all tribes to Kinshasa, the nation's capital.

I didn't see any other White men until the steamer docked at Lisala on the second day. Then a Swiss gentleman came aboard and shared my cabin. Congolese in canoes pulled alongside our steamboat from time to time during the whole trip. They usually traded fish for beer. Sometimes their canoes would be swamped in the wake of the paddle wheels. The lead barge we were pushing ran aground on a submerged sandbar during suppertime on the second day, and the captain had to maneuver until midnight to work the barge free. All of the interesting activity during the trip took place on the barge in front of us. There, children picked nits out of each other's hair, men guzzled beer or played games, and mothers wove their daughter's hair into tight braids that were either tied together like teepee tent poles on top or left sticking out like detonators on ocean mines. I was reminded of the first class passengers on the *Titanic* looking down on the steerage passengers doing all the fun things they were too stuffy to do. The jungle steamed during the daytime and at night the jungle drums pounded incessantly. I don't know if they were sending messages or were just entertainment, but they never stopped.

On the morning of 5 March l967, we passed the steamboat heading upriver to Kisangani and also pushing a big barge loaded with people and produce. The Congo had become much bigger, and now resembled a huge lake studded with islands and clouded with silt. The soil had been red, but now it was chalky white. We stopped at Mobeka, a native settlement, and Lusengo, where a Portuguese lad came aboard and shared my cabin. There were buildings of European construction in both towns, but those in Mobeka seemed to have been abandoned since independence. The Swiss gentleman in my cabin got off when we arrived at Nouvelle Anvers. The next morning we stopped at Lulonga, another native village with abandoned European relics.

At 1:00 PM on the same day, 6 March l967, we arrived at Coquilhatville, a picturesque town on the Equator. A line of stern-wheeler riverboats were at anchor near the docks. Several large warehouses rose up behind the dockyards, and a large Catholic church crowned the hilltop in the distance. A paved avenue lined with coconut palms extended up the hill from the river. The Portuguese youth disembarked immediately. After dinner, I walked up the avenue of palms to the church. The grounds were beautifully landscaped with flowering trees, bushes, and vines. There was also a school, convent, and rectory. A large white statue of Christ with arms outstretched in blessing looked out over the Congo River. A priest came out of the rectory and addressed me in English. We gazed up and down this mighty river, reaching into the jungle and drawing in smaller rivers like a mother with children hanging onto her apron strings. Then I followed the avenue into the main square of the town, where tidy shops with porches supported by white pillars lined a broad boulevard. Across the boulevard stood the *Musee de l'Equator*, looking like an old

Spanish mission in the American southwest. Inside, the curator led me through the displays of Congolese native arts and crafts. In the guest book I printed, Terence Joseph Hughes, Fort Pierre, South Dakota, USA, and signed my name. Although Coquilhatville was nearly on the equator and it was only l5 days to the equinox, gentle breezes off the Congo River kept the weather from being oppressively hot.

A nun got on the *Gouverneur Moulaert* and two passenger boats were lashed to the sides of our barge. Along with the two lashed to the sides of our steamboat, we are now a caravan of five vessels. My cabin mate was now Congolese. I awoke the next morning to find that we were again grounded on a submerged sandbar. We couldn't get off until another steamer heading upriver and pushing two barges stopped to help us. This stretch of river is where the Ubangi and Kasai rivers enter the Congo, and there are many islands and sandbars. By evening, we had arrived at Gomba on the south bank and Liranga on the north bank, which is in the neighboring Republic of the Congo, formerly French Equatorial Africa. There now was much more traffic on the river. We made good time down-river the next day because we didn't stop at all the villages. Here the Congo weaves through hill country, with animals grazing on hilltops above the surrounding jungle, and jungle insects attacked our river caravan in swarms.

The Congolese love children. It is a joy to watch them at play and breaking away from their playmates to come running into the arms of their fat mothers and muscular fathers. The Belgian Waloon got off our steamboat at Coquilhatville. He also told me they have no sense of time. Their language, Lingali, has a word for "now" and a word for "other times," with no distinction between yesterday and tomorrow. Not bad, if life is like this.

The *Gouverneur Moulaert* steamed into Stanley Pool on the morning of 9 March l967. We passed Brazzaville on the north bank and docked at Kinshasa on the south bank. Stanley Pool is a broad quiet part of the Congo River before it narrows and cascades through rapids before entering the Atlantic Ocean. I looked into travel options farther south and learned that I didn't need a visa to enter Zambia. I decided I had to fly into Zambia if I were to catch the boat from Cape Town to Rio de Janeiro in just 2l days. I spent the night in the lobby of the *Hotel du Pool* for 500 francs, about one dollar on the black market. The next morning I went to the airport and checked my backpack. I had loose bowels, so I went to the lavatory. When I returned, the portable stairs were just being rolled away from my airplane and its engines were revving up. I ran out onto the ramp waving my ticket, but it taxied on and took off, with my backpack aboard. A feeling of desperation swept through me, like I hadn't felt since the clouds closed in around me on the upper slopes of Kilimanjaro. But life goes on. I spent the next day touring Kinshasa. It was bustling and clean, unlike dying Kisangani, and native artists had beautiful paintings and carvings in ivory and ebony laid out on the sidewalks. I made some purchases. There was a large Catholic church and Catholic school in the city center and a nice zoo at the edge of town. Animal skins of all kinds were for sale.

The next morning I attended the 6:30 AM Mass and then traveled to Lubumbashi over hilly country incised by deep, dark, narrow river valleys. Lubumbashi, formerly Elizabethville, is the capital of Katanga province, in the mineral-rich southern Congo. Being Sunday, most places were closed so I checked into a hotel near the railroad station and got a good night's sleep. I left for Ndola, the first large town in Zambia, on an 8:00 AM train. I was in the crowded fourth-class cars. The train passed through forests all day and stopped at many villages. We cleared customs and changed engines at Sakenia. The engineer driving the new steam engine locomotive was an Irishman named Steve Bolton. He invited me to ride in the engine and even let me sit in the engineer's seat. We roared into Ndola just before 8:00 PM. Steve took me to his home to meet his wife and then we got in his car and went to the airport, where I found my backpack in the baggage room. Nothing was stolen. We were back at the train station in time for me to catch the 9:00 PM train to Lusaka, the capital of Zambia.

The train arrived in Lusaka at 8:00 AM and I went immediately to the British embassy to collect

the visa to Rhodesia, for which I had applied in Ethiopia. The Brits had denied my application, as Rhodesia had declared itself independent under the government of Ian Smith. I learned at the American embassy that the Smith government didn't require a visa, so I rushed back to the train station and bought a ticket from the conductor as the train was leaving for Victoria Falls, just inside Rhodesia. Another Irishman, Larry O'Connor, occupied the cabin next to mine. Nobody could look more Irish. He had a stocky build, red hair, blue eyes, a ruddy complexion, and his face was the proverbial Map of Ireland. He had been working in Zambia, but his money, clothes, birth certificate, and work permit had just been stolen, so he had to return to South Africa for a new start with just his passport and $l20 in his pocket. He didn't like going back because, "The Afrikaners thought just like Nazis." He told me that yet another Irishman, "Mad Mike" Hoare, commanded all the white mercenaries in the Congo.

We arrived at Victoria Falls at 1:00 AM and checked into the rest camp for 10 shillings overnight. Larry decided to see the falls too. March was the high-water month, and a solid sheet plunged 350 feet into a narrow gorge over a front a mile wide. The gorge zigzagged for miles, and a giant whirlpool swirled at each bend. The mist was so dense that we caught only glimpses of the bottom of the gorge. It seemed to disappear into the center of the Earth. I saw a tiny object fall into the abyss in what seemed like slow motion. We were told they were probably hippos who like to gather in the quiet backwaters above the falls and sometimes venture too far out into the swift current. The roar of the falls was so deafening that Larry and I had to shout at each other to be heard, even though we were only inches apart. I wanted him to take a picture of me with the falls behind me. I gave him my camera and I stepped up onto one of the rocky promontories at the edge of the gorge. Then I slipped on the wet rock and had to flail my arms like windmills to regain my balance. That's when Larry snapped the picture.

Larry took the train to South Africa that left at noon. I stayed and made another tour of the falls with a German who had come up from South Africa. We hiked all over the place, through the rain forest on the side of the gorge opposite the falls, and down to the big whirlpool called The Boiling Pot on the Zambian side. We saw lots of warthogs and monkeys. It was after 7:00 PM when we returned to the train station. He shared what I was discovering was the common opinion of white Africans that black Africans were lazy, thieves, liars, unreliable, incompetent, ignorant, couldn't think, had no sense of time, and lived only for the moment. "Yeah," I thought, "but they make great slaves."

I took the overnight train from Victoria Falls to Salisbury, the capital of Rhodesia. It passed through a game preserve after daybreak, but I didn't see much. I discovered that I was entitled to a Midweek Excursion Fare, and had been overcharged by the ticket agent. He wasn't one of those "incompetent Kafirs," he was John Flynn, a white man (and Irish!). The train stopped in Bulawayo long enough for me to learn from a travel agent that the ship to Rio left two days earlier than I had thought, and that I still had no ticket. The old anxiety game again.

Our train arrived in Salisbury on Saint Patrick's Day, l7 March l967. The green headlines in the paper announced that the British government had stopped the shamrock shipment to Rhodesia, so there would be no "wearin' o' th' green" this day. Not quite. The whole town was decked out in green banners and everyone seemed to be wearing some kind of green apparel. I found out that I couldn't get a first class ticket to Rio on the Royal Interocean Lines, but I might get a second or third class ticket if I signed a statement that I wouldn't mind sharing a cabin with an Oriental. I spent the night at the Young Men's Club and guess who my roommate was? Holger Bull! Then at dinner I met Arthur, from my Kilimanjaro climb, and I learned that Helmut Sibla was also in town. They had all come in through Malawi. I got a South African visa, and boarded the evening train to Johannesburg. The train stopped at Bulawayo again on the way south, and I had time to attend Palm Sunday Mass. A Catholic woman at the train station directed me to the church. She said she had an Irish mother. She also told me I looked like her idol, Jim Reeves, a former Mister Universe muscle man who ran around in loincloths in Hollywood costume epics. Why had British Africa attracted so many Irish people?

The train passed through Bechuanaland, an “independent” Black African state surrounded by White African states (Rhodesia, South Africa, and Southwest Africa), and arrived in Johannesburg at 7:30 AM on 20 March l967. I had hoped to tour the gold and diamond mines, and to see the living and working conditions of the black African miners. I had read John Gunther’s book, *Inside Africa*, written in l954. He described how the mine owners would go into the African villages and tell the young men, “You can no longer prove your manhood by killing a lion with a spear, but we have a much tougher test. Come and work in the mines.” They were a mile underground in 100 degree heat with a jackhammer between their toes during eight-hour shifts, the pay was from 33 cents to 45 cents American per day, they had to sign six-month contracts, they were paid only at the end, and lost all of their pay if they quit early. In the meantime they had to live in company “villages” surrounded by barbed wire, where they had to pay for room and board on credit with interest, all deducted from their salaries at the end of their contract. They worked long hours underground in stifling heat and dampness with no ventilation, so that many got pneumonia and silicon dust eventually turned their lungs into stone. No women were allowed in the villages, so homosexual activity was rampant among the young men. Many had so little money at the end of their contracts that they were persuaded to sign on for a second contract rather than return to their village in disgrace. I wanted to know if that was still going on among these “lazy, thieving, lying Kafirs.” Instead, I was only able to confirm that I had a second class ticket to Rio on a Royal Interocean Lines steamship out of Cape Town ($289). I attended Mass, saw the Steve McQueen movie, *Nevada Smith*, and caught the 9:00 PM train to Cape Town.

The train passed through desert country that looked like Monument Valley in Arizona for a full day and arrived in Cape Town on the morning of 22 March l967. I picked up my steamship ticket to Rio and checked in at the youth hostel in the glen near the saddle between Table Mountain and Lion’s Head, two promontories that overlook Cape Town and give it a very spectacular setting along a curving beach of the South Atlantic. The next day was Good Friday. I met a lady, Mary Carroll, at Mass and she invited me to her home. There she explained apartheid to me. It was like our policy toward Indians. Put ‘em on reservations.

The next day, I and another fellow from the youth hostel climbed Table Mountain via Platteklip Gorge, and looked down over Lion’s Head and Cape Town. It was breathtaking. I attended Mass on Easter Sunday at a small Catholic church near Mary Carroll’s house and she served me a chicken dinner afterward. Then she took me on a drive past twelve stony bluffs called The Twelve Apostles to Hout Bay and we watched the South Atlantic breakers roll in. We rounded the Cape of Good Hope to Muizenberg, a beachside town on the Indian Ocean side of the cape. As I walked along the beach among the colorful bath houses, someone came alongside to tell me that Muizenberg was called Jewsenberg and Johannesburg was called Jewhannesburg because Jews lived in Muizenberg and owned Johannesburg. After a while, all of this gets to be a bit much. We returned to Cape Town on a different road that followed the commuter train through vineyards. When she met me, Mary Carroll had thought I was a lonely sailor and she gave me a most memorable Easter.

The youth hostel closed during the daytime, so I wandered the beaches and walked through the empty city on Easter Monday. On Tuesday, I learned that the ship to Rio wouldn’t arrive for three days. I would have had time to tour those mines in Johannesburg after all. I went to the library to find out what had been going on in the world for the past two months, and I hit upon the idea of selling an account of my experience with the Shifta terrorists to the local newspaper. I presented my idea to the editor. He thought the story should go in their magazine section and I prepared a draft at the youth hostel that evening. The next morning I showed it to the editor, we made corrections, and I typed the final draft in his office. Then I made two ink drawings, one of Shiftas in native attire and one of the troop truck hitting the landmine. I got paid 15 rand ($21). I got Peruvian and El Salvador visas on Thursday morning and spent the afternoon diving into the breakers crashing onto Clifton Beach. The water was ice cold. I boarded the

ship to Rio on Friday, but it didn't leave until Saturday afternoon. That evening I wrote in my journal, "…as Cape Peninsula receded into the distance, I saw what a truly breathtaking setting Cape Town had. The crimson late afternoon sun reflecting off the naked cliffs of Table Mountain and The Twelve Apostles above a ragged, stormy sky, with Cape Town nestled among the peaks, was a sight I won't soon forget."

The ship to Rio was the *Tjitjalenka*, a steamer built in l909 that made l5 knots. The voyage took nine days. I had Brazilian, German, and South African cabin mates, all white despite the form I had signed stating I wouldn't mind sharing a cabin with "colored" people. The *Tjitjalenka* was owned by Royal Interocean Lines, a Dutch company. A South African, Dennis House, was the national director of Youth for Christ and his mission was to rescue the South Americans from the Scarlet Whore of Babylon (the Roman Catholic Church). When we arrived in Rio, I couldn't help but notice black men paired off with white women and tow-headed children with curly hair and milk chocolate complexions running about. The "Scarlet Whore" was certainly in charge, as miscegenation was rampant. Worst of all, the children were radiantly healthy, stunningly beautiful, and obviously happy. How bad can things get? House had his work cut out for him if he expected to transform South America into a Latin version of South Africa.

Rio de Janeiro may be the most arresting city on Planet Earth, because of its natural setting and its innovative architecture. I cherish two memories. The first memory is the view from our ship as it approached Rio at the crack of dawn. The city lights were still blazing, and spotlights illuminated Sugarloaf and the giant statue of Christ the Redeemer with His arms outstretched in blessing from the summit of Corcovado. It looked like the Second Coming of Christ, because Corcovado was still shrouded by the cloak of night so the statue seemed to be suspended in the night sky. The *Tjitjalenka* steamed past Copacabana Beach, framed by an arc of tall beachfront apartment buildings shining white in the morning sun, past Flamingo Beach, and docked in Guanabara Bay. The second memory is the view from the feet of Christ atop Corcovado as the sun was sinking in the west and the lights of Rio began to appear like the first twinkling stars. Rio was laid out below, with its numerous bays ringed by streetlights sparkling like diamond necklaces, white-capped waves rolling onto its curving beaches, and rocky hills softened by swaying palm trees.

I could return to Chicago by taking a train to Bolivia and busses north on the Pan American Highway from La Paz, or by taking a bus to Belem at the mouth of the Amazon, boats up the Amazon to Peru, and picking up the Pan American Highway at Lima. I decided on the river route. The road to Belem passed through Belo Horizonte and Brasilia. I left Rio on12 April 1967 on a bus that wound through forests as it climbed the Brazilian Highlands. Belo Horizonte was the capital of the state of Minas Gerais, but it was a big town, not a city. The tall clock tower and the Catholic church on a hilltop were the only noteworthy structures. My bus arrived before dawn and the day was already hot before the 7:00 AM bus departed for Brasilia. A boy at a little sidewalk homemade wooden stand was selling frozen fruit-flavored "popsicles" and I gave him a one cruzeiro note (about 37 cents) to buy one. He looked at it, shook his head, reached under his counter and handed me two bags full of "change" for the popsicle. Brazil had recently devalued its money, with one new cruzeiro equal to 1000 old cruzeiros. I had handed the boy a new cruzeiro note and he had only old cruzeiros to give me in change. The bags were full of one and two cruzeiro notes. I picked out a few of the crisper ones for souvenirs and gave the rest back to him. The road to Brasilia passed through rolling country, some forested, some grasslands, and all under-populated. The lunch stop was at a restaurant by a reservoir, where a caged jaguar and two parrots were on exhibit.

It was dark when the bus topped a hill and I saw great belts of lights illuminating the wide streets and boulevards of Brasilia spread across a broad plain below me. The federal government had moved from Rio to Brasilia a few years earlier, in the hope that the move would open up the hinterland to development, so large government buildings lined the main avenue but much of the remaining city was

still in the planning stage, with lots of streets laid out but little housing and construction. The city was designed to look like a bow and arrow, with the broad avenue being the arrow and a wide boulevard curving across it being the bow. The arrow was pointed toward the Amazon Basin, and the message was that the future of Brazil would rise from the largest rain forest on Earth. The train station was at the "feathered" end of the arrow, the bus station was where the arrow crossed the bow, and the presidential mansion was at the arrowhead. The bow was also the dam of a reservoir that provided water and recreation for the city dwellers. The reservoir was to be the heart of the residential area of Brasilia, but that was still a dream at the time of my visit. All of the government buildings had ultra-modern architecture that has now been imitated worldwide.

I wandered the streets of Brasilia for hours and then took the 5:00 AM bus to Belem. By dawn, the bus had crossed the watershed separating the drainage basins of the Parana and Amazon rivers. These are the two great rivers of South America. The vegetation changed from a temperate highland forest to a tropical lowland jungle as my bus descended from the plateau of the Mato Grosso (Great Forest) into the Amazon Basin. A road led west to Porto Velho and Rio Branco at Anapolis, but our road continued almost due north between the Araguaya and Tocantins rivers. The Amazon jungle crowded in on both sides. The road was new and unpaved. Settlements were few and far between. The frontier of the United States of Brazil was just opening up, nearly a century after the frontier closed in the United States of America. We stopped at a small frontier town at 10:00 AM and gorged ourselves on "plates and bowls filled with steaks, chunky roast beef, potatoes, rice, beans in heavy bean sauce (called *feijoada*), tomato-cucumber-lettuce salad, spaghetti, chicken, and fruit," all for 2500 cruzeiros (90 cents), as recorded in my journal. We stopped at 6:00 PM at Porangatu, where we spent the night in a modern hotel for the same price.

It took three more days to reach Belem. Nights were spent in communal *dormatorios* where mosquitoes sucked our blood all night. Here are some entries from my journal: "My clothes have all turned red from the dust of the red soil swept up by our bus. All of Africa and of South America which I have seen have this red soil. Perhaps they really were once joined, as some geologists think." (15 April 1967, as our bus neared Guaru, 1110 kilometers north of Brasilia.) "Today is Sunday and many of the villagers are in their Sunday clothes. A surprising number of people have blonde or light hair which I didn't expect to find among Portuguese, which they are…One sees Brazilian cowboys with their leather hats and open shirts riding down the streets." (16 April 1967, in Esterito, on the east bank of the Tocantins River.) "We were off at 6:00 AM and the jungle was really steaming in the early morning sun. Great clouds of vapor rose up and drifted off to the south…The Tocantins veered off to the west and joined the Araguaya, but we continued north. We were really in jungle now. Giant trees hanging with vines towered over the road. The jungle grew right up to the edge of the road so it was as if we were passing through a narrow green-walled canyon." (17 April 1967, about 1800 kilometers north of Brasilia.)

The bus arrived in Belem at 8:30 PM, 2161 kilometers north of Brasilia, at the mouth of the Amazon. When I was there, it was 350 years old and a half-million people called it home. I spent the night in a *dormatorio* run by a Japanese Christian, where I had a supper much like the dinner I described four days earlier, and which turned out to be standard in this part of Brazil. The next day I learned that I had just missed the *Valente*, a riverboat to Manaus that continued on to Iquitos, in Peru, but that I could intercept it if I took a plane to the next town on the Amazon. The plane trip was unforgettable. It was a small plane, so the pilot flew low and followed the course of the Amazon, which was in full flood. "It was 300 kilometers wide at Belem, where it formed a huge delta, but was still some 30 to 60 kilometers wide all the way to Santarem. Along the way, we flew through a tremendous electrical storm, passing between boiling black thunderhead clouds above and the steaming green jungle canopy below. The treetops looked like green cauliflower, and the canopy was crisscrossed by endless silver rivers all winding their way into the mighty Amazon. The clouds lit up with internal electrical discharges, and great jagged bolts of

lightning flashed from the clouds to the jungle and, surprising to me, from the jungle up into the ragged heavens, as if the Amazon rain forest were doing battle with Thor, seated on his throne in the clouds. Shafts of sunlight stabbed through the dark clouds and illuminated the jungle canopy. Sunlight and lightning fired like flashbulbs, turning the thin luminous layer of clear sky between the clouds and the jungle into a celebration of light and shadow, always shifting, always changing, and all seemingly orchestrated by deafening thunderclaps that drowned out even the drone of the airplane engine. In the center of this chaos, the Amazon wound its silent way to the Atlantic like a gigantic yellow anaconda." (A letter to my father.)

Manaus is the capital of the Brazilian state of Amazonas. It sprawls across relatively high rolling hills along the Rio Negro (Black River), nine miles from where it joins the Amazon. The Rio Negro is infested with black algae, whereas the Amazon is laden with yellow silt. The two rivers meet at the "wedding of the waters," which is a distinct line where black meets yellow that continues for miles down the Amazon before the two rivers finally blend. It was home to 200,000 people at the time of my visit. I bought a boat ticket to Iquitos, where I was told another boat would take me an additional 750 miles to Pucallpa, both in Peru, and a bus could take me over the Andes from Pucallpa to Lima. The riverboat from Belem to Manaus was the *Valente*, and it wasn't continuing on to Iquitos until Friday, so I had three days in Manaus.

On the first day, I was introduced to Professor Ruy Alencar, who invited me to speak to his English class at the *Instituto Cultural Brazil-Estadas Unidos da America*. I spoke about my trip up to arriving in Manaus. When I invited questions, they were all about the Russian part of my trip. I told them that from what I had seen so far, Latin America was ripe for revolution because (1) here and in Czarist Russia the Church supported landowners, (2) here and in Czarist Russia the economy was a peasant-landlord feudal society, (3) the rich escaped paying taxes in both cases, and (4), in both cases peasants could not better their lot. However, I didn't think a Marxist revolution would succeed in Latin America because (1) dictatorships don't last long in Latin America, (2) Latin Americans won't sacrifice material comforts today to build a utopia in the distant future, and (3) if a Russian sees a slacker, he reports him, but a Latin would join him. I also compared the attitudes of pre-revolution and post-revolution Russians toward Communism. It may have all been bullshit, but it was what I thought at the time.

The next day I took a canoe trip along the Rio Negro and some of its tributaries with the Amazon Explorers' Club, which is operated by three young fellows in Manaus. Two others on the trip were a 75-year-ol Texan who had dated Mamie Eisenhower and was still a close friend of Ike and Mamie, and a Brazilian German Jew who was 38 years old and lived in Manaus. He told the story about an angel who confronted God by saying, "So you say you're just! I've been all over the world and I've seen the burning desert where people called Arabs live. Nothing grows and, if it ever does, locusts swarm in and devour everything before the harvest. I went to the Arctic and saw people called Eskimos who sat for hours in the freezing cold hoping to catch a fish through a hole in the ice. They never succeeded. Then I went to Brazil and it was like the Garden of Eden. Nobody has to work. Fruit and nuts are everywhere just for the picking, and the weather is always beautiful." God asked, "How were the people in all three places?" The angel answered, "Everyone was miserable." God said, "That's justice!" It was a funny story, but the Brazilians I saw didn't seem to be miserable. We exchanged viewpoints along these lines, as our canoe followed a winding stream with the jungle forming a canopy overhead that was filled with chattering monkeys and chirping tropical birds. Then we boarded a small boat that took us down the Rio Negro, past lily pads six feet across to the junction with the Amazon, where we saw the "wedding of the waters" up close. Then we crossed the Amazon to visit a rubber plantation. Manaus had been the rubber capital of the world until the British smuggled out seeds and planted them in Ceylon and Malaysia, using modern agricultural methods, whereas the Brazilians just tapped rubber trees where Nature put them. Soon Brazil lost its rubber monopoly and Manaus began its long decline. The river tour cost only seven dollars and the

Texan, who had been everywhere and was looking for tourist possibilities in Latin America, pronounced it one of the best tours for the price that he had ever taken.

In its heyday, Manaus was loaded with all the culture money could buy. A magnificent opera house was built that was still impressive when I visited it. All the houses along the Rio Negro and the Amazon were elevated above the water by long poles, so they could survive the flood season. The dock in Manaus was built upon large floating metal tanks that rose and fell with the flood. I boarded the *Valente* around noon on the third day, and it departed for Iquitos shortly thereafter. The *Valente* was owned by the Booth Lines. The officers were Scots, English, and Irish. The pilots who keep the riverboat in the ever-changing main channel were Peruvian Indians, the crew were mostly Puerto Rican, and the steward was a black man from Port of Spain, Trinidad. The Amazon in flood was like an inland sea from Belem to Manaus and pilots weren't as important. It was still wide, but narrower and more winding from Manaus to Iquitos, so pilots earned their pay.

As they did on my Congo riverboat, people from villages along the Amazon came out to us in small boats to trade. The Congo villagers were dirty and wore rags, but here the villagers were clean and wore colorful clothes. They were Indian-Portuguese Mulattoes at first, but they became more obviously Indian the farther up the Amazon we went. Both the Congo and Amazon have huge catfish. On the first day, an officer told me that a sailor on one of the Brazilian gunboats that patrol the Amazon fell overboard and, a few days later, the body of a giant catfish washed ashore with the two legs of the sailor sticking out of its mouth. The catfish choked to death on its meal. The officer also told me that a twelve-year-old boy from Iquitos was swallowed by an anaconda recently.

The boat trip to Iquitos took eight days. Here are some entries from my journal. "The Amazon jungle is much more luxurious than the Congo jungle. There aren't too many dead trees, there are more varieties of trees, and vines grow over everything. It is really dense also – like a wall." (22 April 1967.) "This evening the SNAPP ship run by Brazil passed us on its way from Iquitos to Belem. It makes the run monthly. The boat looked like an old Mississippi River showboat. It had three decks and was all lit up like a palace, with strings of lights around each deck." (23 April 1967.) "There was an unusual sunset tonight; the gold glittering water, the dark silhouette of the jungle, and then above it all three or four great pink shafts set against a blue sky converged on the horizon where the sun had sunk. Gray splotches of clouds of various hues formed a pattern before this backdrop." (24 April 1967). "Tonight there was a fierce electrical storm. No rain fell but great flares of heat lightning lit up the horizons, revealing ragged gray clouds against an almost incandescent sky. Overhead, ribbons of chain lightning traced intricate networks as they snaked their way across the heavens to the accompaniment of rolling, crashing peals of thunder. It was quite a show." (25 April 1967.) "Today we watched big red monkeys and beautifully colored birds flit through the trees. We also saw big turkey buzzards. There are lots of binoculars and everyone scans the jungle with them on the lookout for some unusual sight. They also watch the Indians who line up in front of their huts to stare at us." (26 April 1967.)

This last entry was before we came to the big bend in the Amazon where the frontiers of Brazil, Colombia, and Peru meet. We anchored overnight in the swift current at Leticia, the Colombian border town on the north bank, and cleared customs in the morning. Then we went upstream a short distance and cleared customs at a Peruvian post on the south bank before noon. From here on the jungle changed. Trees were very tall, and I was told that the riverbanks at low water were 30 to 60 feet high. But at high water during my trip the river had invaded the jungle and we could look right into the forest from the decks of the riverboat. From my journal: "But now at high water we can look out over the top of the undergrowth right into the jungle through gaping holes that appear among the vine-covered trees. It really looks threatening in there – dark and foreboding, as if it were just waiting to swallow us up. If a person were dropped 100 feet into the jungle, he wouldn't possibly know that the river was only a short distance ahead, and unless he started in the right direction he would wander forever. I don't see how it would even

be possible to tell direction in there (without a compass). You can't see the sun or sky except through holes in the trees where shafts of light penetrate the darkness, and you can't see more than a few yards ahead." (27 April 1967.) We passed by a large leper colony that evening and, as the sky cleared and the stars came out, I could see both the Southern Cross in the south and the Big Dipper in the north. We were almost on the Equator. A Peruvian gunboat came out to "inspect" our ship the next morning, but actually came to buy booze.

We passed an oil refinery with its cracking towers all lit up in the wee hours of 28 April 1967, and by dawn we had pulled alongside the floating docks of Iquitos. An old passenger boat was tied up at one end of the dock. It was the *Huallaga*, and it would take me another 750 miles up the Amazon to Pucallpa, where I could catch a bus over the Andes to Lima. Iquitos and the Peruvian Indians living there were quite picturesque. I had three days for sightseeing. A new Catholic church and school were being built near the docks. Most impressive was the old cathedral in the central square of Iquitos. A glass casket under one altar contained a body on a bed of flowers, with no signs of decomposition. Whether the body was real or a dummy, I couldn't say. I tried the local busses, which were wooden and had low ceilings. The short Indians could stand up in them but I had to stoop. I attended Mass the next day, Sunday, at the cathedral. Iquitos had two or three hotels, one of which was deluxe, four movie theaters, and a promenade with parks and playgrounds along the riverfront. A statue 100 feet high of San Martin, the liberator of Peru and much of South America, dominated the main city park. Sidewalk vendors sold ice-cold "snow cone," bananas, Coca Cola, and salami sandwiches for just pennies. Like Manaus, Iquitos was not beautiful but it had charm. I spent the night on the *Valente*. An Irish officer told me that the Indians call all white men "gringos" even if they are Spanish, and they don't like black men. Even so the black West Indian crewmen can spend the night with an Indian woman if the price is right.

The most interesting sight in Iquitos was the floating village at the south end of the city. Iquitos was built on low bluffs at a bend in the Amazon, and the floating village occupied the inner part of the bend. It consisted of wooden houses with thatched roofs, along with shops of all kinds that were built on rafts of huge logs lashed together and separated by waterways that served as streets. Boards across the logs were the sidewalks, canoes were the vehicles, and the whole village rose and fell with the flood.

Monday was May Day. I went downtown and bought a Peruvian road atlas. It showed a new highway route from Argentina to Venezuela on the east slope of the Andes that was under construction. Its official name was the *Carretera Marginal de la Selva*, the Highway Bordering the Jungle, but people called it the Colonizing Highway. It would open up the Amazon Basin to settlement and connect all the Andean countries, just as the Pan American Highway had connected them on the west side of the Andes. An old German seaman was sitting on the dock where the *Valente* was tied up. He told me the most amazing story of how he came to be sitting at that spot. The full account is in my journal but, briefly, after working on a tramp steamer in the East Indies, he jumped ship in Morocco, joined the French Foreign Legion, worked on a German ship bound for Maine on the eve of World War II, had his face kicked in by the Nazi officers because of a dispute, went from Maine to Brazil on another ship, traveled extensively on riverboats in South America, was the chief engineer on a ship to Haiti, where he jumped ship and was thrown in jail, jumped ship again in Mexico, went to Virginia and was jailed again, got on a ship to Venezuela, and eventually made his way by river boats and mountain trails to Pucallpa in search of gold. He was just an old bum, but he had really lived. He told me about a bandit who robbed a foreign traveler. Then the bandit asked the traveler if he knew Spanish. The traveler said, "Yes." Then the bandit asked him if he knew the name of yonder butte. He did. The bandit shot him dead. The bandit's companion asked, "Why did you kill him?" The bandit replied, "He knew too much!"

I spent the evening with some of the officers on the *Valente*. One told me about a group of rich elderly American tourists who had come to Iquitos on the *Valente*. At one stop, a boy offered to sell two baskets full of fresh limes for 1000 cruzeiros, about 35 cents. One Yank "Jewed" the lad down to 500

cruzeiros, and boasted to the others about it, never thinking that the l7 cents he "saved" meant nothing to him, but much to the boy. I wonder if he is dead now and made it through the eye of a needle into the Kingdom of Heaven. We got to talking about missionaries, the ones I knew from Africa and the ones they knew in South America. My journal is full of such stories. Pentecostals drove the officers nuts. Many Pentecostal missionaries were women. They would make the officers think they were "available" and then try to convert them. A Scottish officer told me he asked one of them if they would ever marry an Indian or Negro if she fell in love with one. "Really, I just couldn't," she replied. "And you call yourself a Christian!" he said in disgust. "You won't smoke or drink, but you refuse to practice the most important commandment – love thy neighbor!" Then he said to me, "I'm a Catholic and I don't practice my beliefs too well, but at least I follow that one." About that time the captain and the other officers arrived alongside the *Valente* in a skiff. They were roaring drunk after an evening of loving their neighbors.

The *Huallaga* left for Pucallpa on 2 May 1967. I spent the morning watching dockworkers finish putting on cargo, which included flush toilets, too late for my stay in Pucallpa, I thought. One dockworker had no nose and every other tooth was missing. He looked like Lon Chaney's Phantom of the Opera. A very muscular midget strutted about as though he owned the pier. Passengers began arriving two hours before our 7:00 PM departure. They brought chests, bags, boxes, and cases, until the *Huallaga*'s decks were packed with people and their luggage. They strung up hammocks everywhere. When the stars came out, I watched the Southern Cross and the Big Dipper jockeyed about in the night sky, and judged that the Amazon had become a very winding river. It had. The voyage to Pucallpa was generally south and took five days, partly because the river meandered a lot and partly because the *Huallaga* stopped at several settlements along the way. These all looked like the frontier outposts along the Missouri in the nineteenth century must have looked, except for the jungle. Houses were usually thatched-roof huts, and horses or cattle grazed in cleared areas that had been fenced in. The larger settlements had a church and school. Around 1:30 PM on 3 May 1967, we passed the place where the Maranon and Ucayali rivers meet to become the Amazon. We continued up the Ucayali, and the width of the river was immediately halved. After dinner on the third day, we watched dolphins leap out of the muddy water alongside our boat, 3000 miles from the sea.

The *Huallaga* reminded me of the *African Queen*, in the movie by that name starring Humphrey Bogart and Katharine Hepburn. The story took place in East Africa during World War I. Kate and Bogie were trying to escape from the Germans after they had killed Kate's missionary brother. At one point, Bogie had to put a rope over his shoulder and pull the *African Queen* off the shallow bottom of a river. When he climbs back onto the boat, he discovers that his body is covered with leeches. "If there's one thing I can't stand, it's *leeches*!" he says, as his skin visibly crawls. At times, I wondered if I would have to do a "Bogart" and pull the *Huallaga* up the Ucayali River in some of the narrow places only a stone's throw across.

The high water was definitely beginning to recede after the second day. The river banks were getting higher, and we could see the devastation caused by the flood. I wrote in my journal, "Below the high cutbanks lie whole sections of forest, forming a twisted and turning mat of green in the swirling eddy currents. Roots stick out of the bank in grotesque profusion and trees hover precariously overhead, half rooted to soil and half rooted to air. Over some stretches, so many trees have toppled over the newly carved cliffs that they are strung along like railroad ties. It is a weird sight to see these inverted forests, their heavy upper limbs sucking water and the tangle of roots breathing air." At another place I wrote, "Now and then we pass a wide belt of shore which is barren of all vegetation save battered patches of bush, and which extends in a swaying path far back into the jungle to the foothills on the eastern horizon. A river of black mud flows down these winding avenues with almost glacial imperceptibility, and oozes over the eight or ten foot bank into the water. The jungle steams along both sides and if the mud were red one would think that this was a lava flow from some volcano erupting back in the foothills." That was on

the third day.

On the afternoon of the fourth day, any illusion that the flooding was over quickly vanished. I wrote, “Shortly after dinner the clouds, which had been gathering and rumbling all morning, turned black and opened their floodgates. The water came down in sheets, literally waves, which swept across the river and beat down on the tin roof of our boat like a cadence of rolling drums. Visibility rapidly approached zero and the pilot ordered the engines to idle. He couldn’t see the river. It lasted for over an hour and I began to feel the kind of uncertain dread that those doomed souls who ridiculed Noah must have known as they beheld the heavens descend upon them. It was a cloudburst like I never saw! No wonder the Amazon flood was forty to a hundred miles wide! No wonder whole forests were swept away! No wonder houses perched on high ground were raised up higher still by long poles!” As the deluge lessened and visibility improved, “Great clouds of vapor tumbled slowly above the jingle as if Nature itself were gasping for air after the smothering inundation. Draughts of steam rising from the jungle collided with low hanging clouds at almost treetop level, and created a rolling avalanche of white and gray, in slow motion.” At ground level, “The river was choked with vegetation…and had taken on a new, deep, chocolate brown color from the acres of soil carried away in the turgid waters. The shoreline was Desolation itself! It was the Diluvian World after the forty days and forty nights, the awesome aftermath of the Deluge of Genesis.” More than that. “It was a scene from the Mesozoic Era, recreated across the eons of time, so that for a brief second my eyes could gaze back to the foundations of that world, the primeval world, Earth emerging from its turbulent infancy. Had Tyrannosaurus Rex come thrashing through the forest, head above the trees, looking this way and that for prey, I don’t think I would have felt surprise. If a brontosaurus reared its head warily from the leaf-strewn river, he would have seemed a natural part of the scene.”

It rained twice more on the fifth day, but not like the fourth day. We passed a large banana plantation in which rows of banana trees had been lost as they dropped into the river on successive terraces of slumping ground. The owner would have to clear an additional swath of jungle 100 feet wide to make up that loss. Amazonian Indians appeared in their canoes, which were made of boards, unlike the hollowed-out logs used as canoes by the Congolese. Also, their paddles were wide and leaf-shaped, whereas the Congolese paddles were narrow and longer. They paddled sitting in the front. The Congolese paddled standing in the back. By mid-afternoon we rounded a bend and there was Pucallpa in the curve of the next bend. When the weather was nice, a redhead named Carmen Vinira would lounge against the railing on the deck, her long red hair falling around her face and down her bosom, her head lowered, but her eyes alert and watching. Now she was getting painted up in her cabin. She gave me a kiss as she left the boat.

Pucallpa was a boom town in 1967. Another steamboat was tied up along the dirt bank twenty feet high that served as a dock, at least three sawmills were operating, a lot of construction was taking place, two banks were operating, and I saw three hotels doing business. A young man who spoke English took me to a cheap one that was converted from a cow barn with the stalls made over into rooms and dirt floors. Then he took me to the bus station where I bought a ticket to Lima, and then we had supper together. His name was Juvenal Mendizabal. He had studied at Jamestown College in North Dakota, and had worked on the John Brunner farm near Mitchell, in South Dakota. Mitchell was where my mother’s parents had lived when I was a boy. What are the odds against Terry Hughes from South Dakota, a state that sends out few world travelers, meeting a poor lad from the Andes in Peru, where even fewer people see any part of the rest of the world, and finding out that they had both been to the same South Dakota town where my grandparents lived, after he accosted me in a river town near the headwaters of the Amazon on 7 May 1967?

On the next day, I met Jerry, a young Protestant missionary from Michigan who was a clerk at a Christian book store in Pucallpa. He said it would surpass Iquitos as the main Peruvian city on the

Amazon because it was accessible by both riverboat and road, but they still have to hike over mountain trails to get to some mission outposts. Jerry objected to siestas and the many festivals. He thought they made people lazy. He said this flood was the worst in twenty years, and after heavy rains a wall of water comes down the upper Amazon tributaries like a seiche that lifts boats up as it passes through. The son of one missionary had turned Communist and was leading a band of marauders. Like Iquitos, Pucallpa had an oil refinery and a floating village on the river. All the streets were mud, except the one where the road to Lima began. It was paved for some 30 to 40 miles out of town before also becoming mud. The bus left in the late afternoon and crossed elevated flatlands that were cleared and planted for agriculture. Then we climbed into the Selva Alta, the High Jungle, which is quite different in appearance from the Selva Baja (lower jungle) of the Amazon Basin. Instead of spreading out over a vast floodplain, it climbs vertically up steep mountain slopes; but it is the same jungle, the same living thing that envelops everything in its path. In the waning sunset I caught a glimpse of the first great range of the Andes. We crossed bridges, passed through tunnels, drove along precipices, and beneath waterfalls. The jungle either enveloped this road in a tunnel of vegetation or it fell away, leaving the road alone and lonely, perched on the naked edge of some sheer cliff. I heard the thunder of mighty rivers roaring at the bottom of deep chasms. Finally we came upon a column of halted trucks, where we waited until dawn.

The trucks had stopped because the lead truck was stuck in the mud. A D8 Caterpillar that was used to clear mudslides from the mud road also pulled the truck loose and the caravan was on its way. By noon we had crossed the first range of the Andes. Mountain summits had been cleared for planting coffee, tea, and cacao plants, so they wore green skullcaps, not the icy caps of the high Andean peaks. We descended into the valley of the Huallaga River to the picturesque village of Tingo Maria. Then our road followed the Huallaga, which had become a raging torrent of endless rapids. We finally crossed the river on a bridge supported by a parabolic arch high above the roaring water and followed a smaller tributary. I began to appreciate what a feat of engineering building the Colonizing Highway would be.

As daylight faded and darkness fell on that second night, I experienced something that I tried to capture in my journal. It began as our bus emerged from a long tube of jungle foliage that had engulfed the road. Here is what I wrote: “Then began the dream. It had all the aspects of a dream; unreal, haunting, vaguely frightening, yet curiously fascinating. We climbed rapidly. Our bus was negotiating a series of hairpin turns so that first one side and then the other was grinding along the rim of a world that had now become flat. We were poised on the edge of outer space. There was no deep rumbling of water to assure us that there was somewhere a bottom to this abyss. As we skidded around each curve it seemed as if our bus would go hurtling out into that black gulf. Then, glancing sharply upward, I saw a grouped constellation of blue-white and yellow-white lights, as much above me as ahead of me. Inching its way toward this island in the sky was a winding column of lights which approached and, indeed, included the lights of my own bus. Finally the procession of lights attained its goal. It was the souls of Viking heroes slain in battle, bearing torches and filing their way into the halls of Valhalla. It was the angels leading the just up Jacob’s ladder to the stars.”

The constellation of lights turned out to be a massive staging area for road-building equipment. The bluish lights were floodlights and the yellowish lights were from windows in buildings. We kept climbing until the cluster of lights had become a galaxy as far below us as it had been above us. Then we crested another mountain divide and descended again into the valley of the Huallaga, which had now become a wide stream, and we stopped in the town of Huanuco until dawn. With a broad-faced Indian as our new driver, we continued across a desolate landscape, rocky and treeless, divided by crumbling rock walls into small holdings, each with a cave or tottering dwelling where people clung to the edge of existence. It reminded me of Connemara in western Ireland, but on a vast scale. Scattered about were gigantic stone wheels. “Who made them? And from where did they come?” was my journal entry. We were very high. Early-morning frost coated the tundra-like heath, giving everything a ghostly appearance.

No mountain peaks rose above us, but I saw jagged snowclad peaks straining in the distance to peer onto this lofty plateau. Then, in the early morning light, we came over a hill and looked down on the tile rooftops and church steeples of Cerro de Pasco flashing against the rising sun.

Cerro de Pasco is an old mining town. Mining was the only industry that could bring life to these forlorn heights. People were already scurrying across the cobblestone streets as we arrived. They were virtually all Peruvian Indians. The short, plump women were wrapped in colorful shawls and wore stiff white hats with a broad brim and a tall, flat crown wrapped in a black ribbon. Some of them were selling hot bread and coffee, which we bought and then continued on our way. We passed mines and llamas on the plateau, which resembled the rolling grasslands of South Dakota except this was the 15,000 foot-high altiplano of Peru. We eventually arrived at the head of a canyon that we descended along switchback curves, across suspension bridges, past mine after mine, until the canyon gradually widened, the red hematite peaks gave way to green fields. Grazing cattle brought tranquility to the harsh land, bright villages replaced dingy mining camps, and our winding road became a broad tree-lined avenue leading to a city sparkling in the sun on the wave-lapped shores of the Pacific Ocean. It was Lima, capital city of Peru.

I spent the night in Lima and the next day, 11 May 1967, boarded a bus that would begin my journey home on the Pan American Highway. The bus passed through the desert country along the Pacific coast of northern Peru, where rain rarely falls. Three American girls who had spent several months in Bolivia were on the bus, and I learned about the ups and downs of working in Indian villages with the Peace Corps. By afternoon of the next day, the desert country had become eroded until it resembled the Badlands of South Dakota. Oil pumps dotted many of the sand dunes along the coast, and cactus and bushes became common on a landscape that had been completely barren farther south. We crossed the frontier into Ecuador and the land had become lush with vegetation by the time we arrived at Porto Bolivia, a clean prosperous town with spacious boulevards and beautiful parks. There we boarded a boat similar to the *Huallaga* that took me from Iquitos to Pucallpa on the upper Amazon. It arrived at Guayaquil, the port city of Ecuador, in the gray predawn. Marble buildings with old Spanish architecture lined the waterfront and the main avenue into the city. Palm trees waved over all the major streets. There was a leaning tower that looked like a smaller version of the Leaning Tower of Pisa in Italy.

In Lima, I had bought a through-ticket to Quito, the capital of Ecuador. In Guayaquil I learned that it would have cost half as much (only eleven dollars) if I had bought separate tickets to each of the larger towns along the way, as the American girls had done. These ways to save money came to my attention too late again and again during my whole round-the-world trip. My bus passed through banana plantations on coastal plains, stopped in a town during a festival, and then followed a narrow canyon into the heart of the Andes to Quito. This ascent was very much like the climb through the Selva Alta from Pucallpa onto the Altiplano, except that the road was much better and the trip took only one day. It was dark when we arrived in Quito, which occupied a shallow valley surrounded by highlands. I rejoined the American girls and we had a delicious supper at a Chinese restaurant for a dollar. Then we strolled around Quito to sightsee. Like all Latin American towns I had seen, Quito was built around one or more squares which enclose parks landscaped with flowering bushes and a variety of trees. Tall statues of San Martin or Simon Bolivar, usually on horseback, are invariably in the center of the largest park. A huge Catholic church and the most impressive government and commercial buildings line the main square. With the ornate architecture and cobblestone streets, Quito had the appearance of a medieval town. We all spent the night in the Grand Hotel. I discovered that none of the girls was in the Peace Corps. They were all rich kids on a lark, traveling on the cheap. One “camped” with Peace Corps workers and mooched off them.

Our bus to Colombia left Quito as dawn was breaking on Sunday morning, 14 May 1967, and followed a cobblestone road through canyons and gorges until noon, when we entered gentler mountain country where small farm plots rose far up steep, green-carpeted slopes. By late afternoon, we came into

rolling grasslands studded with large, strange cactus-like plants that looked like fields of giant dandelions gone to seed. I crossed the frontier into Colombia by taxi and spent the night in a border town hotel for 10 pesos (60 cents).

I was up at 6:00 AM to catch the first bus to Pesto. A Peace Corpsman with a degree in business administration and who was teaching co-op marketing to Colombian peasants was on the bus with me. His name was Paul. He said he could make no headway if he antagonized the village padres, who were also suspicious of Protestant missionaries who engage in "sheep stealing" from Catholic flocks in the mountains instead of evangelizing pagan Indians in the Amazon Basin of Colombia. Paul told me that the Colombian bishops were concerned that outsiders were bringing in Marxist ideas. Bishops were nominated by the state, and came from the families of rich landowners, whereas parish priests came from peasant families. Communist revolutionaries and bandits did indeed roam about in Colombia, as do drug dealers and bandits today. I noticed that Colombian men had long machete-like knives that they carried in beautiful leather scabbards attached to their belts. The road to Pesto followed canyons as it crossed two or three Andean ranges in the morning before leveling off onto a low plateau in the afternoon. By 10:30 PM we saw the lights of Cali decorating the slope of a low mountainside like Christmas tree lights. At the hotel, I had a delicious supper of huge steaks for less than a dollar, a hot shower, and a good night's sleep.

Cali is Colombia's main port on the Pacific. I had hoped to get a boat there to Panama if there was no overland transportation across the Darien Gap of southern Panama. It was the gap in the Pan American Highway, as it still is today, but I had heard that some sturdy vehicles had made it through. Such was not the case, however, and I also discovered that no passenger-carrying ships were going to Panama any time soon. My only choice was to fly to Panama City from Bogota. I had time to do some sightseeing, and I was able to verify what many people had told me. Cali has the most beautiful women in South America, at least the parts I visited. In fact, I would say that Cali had the most beautiful women I had seen since Ethiopia. They were absolutely gorgeous in the Latin ideal of beauty.

The morning busses to Bogota had already departed, so I had to take a taxi, 75 pesos instead of 30 pesos. The taxi crossed the plateau for three hours before climbing the same mountain ranges I had crossed the day before, but taking different canyons that cut into a higher plateau where Bogota was nestled among heavily forested mountain peaks. The countryside was lush, the climate was temperate, and the towns were prosperous. Along the way we passed many shrines, often of the Madonna and Child attended by lit candles and fresh flowers, and every village had a large whitewashed Catholic church in its central square. Nearly all villages had a large cross overlooking them from a mountain top, as did Bogota, and many villages had the three crosses of Calvary on a nearby hill. I paid the taxi driver 25 pesos to take me five miles to the airport, in addition to the 75 pesos I paid for the five hundred miles from Cali to Bogota. I spent the night at the airport and took a morning plane to Panama.

My plane landed in Panama City at 10:30 AM on 18 May l967. Some small skyscrapers rise above the old brick buildings in downtown New Panama, which was ringed by Old Panama with its picturesque narrow, winding cobblestone streets lined by buildings having overhanging balconies with wrought iron railings. Whores and their pimps were everywhere. In the midst of all this sin was the notorious Buffalo Cantina, a favorite haunt of sailors and seamen from all over the world who boozed and debauched on shore leave as their ships were passing through the Panama Canal. Every country of Central America required a visa, so I spent my time visiting their embassies. The next day I was on a bus through hilly jungles on the way to David, the last major city in northern Panama. We arrived after dark and I spent the night at the Pension Hotel in a two-dollar room.

By 6:00 AM I was on a bus to San Jose, the capital of Costa Rica. The high point of the trip, literally, was crossing the Chirripo Grande, a peak 12,467 feet high on the cordillera of Central America. Many people live on its slopes and the air is chilly near the top. They burn coal from numerous deposits

to keep warm and white smoke from coal fires rises up in columns from all over the mountains to merge with the clouds. It was a fantastic sight. The children were ruddy, strong, handsome, and numerous. The population of Costa Rica was largely Spanish, and San Jose was clean, modern, and prosperous. The girls in the hotel where I stayed were real Amazons, lump-jawed behemoths. I was up in time for the 6:00 AM Mass and afterward I caught the bus to Managua. It passed through country that reminded me of South Dakota, with its grasslands, cowboys, and cattle. However, the cattle were Brahmas instead of Herefords.

Just after crossing the frontier into Nicaragua, we followed the shore of Lake Nicaragua. Two perfect volcanoes rose from an island in the lake. Then the bus crossed rich rolling farmlands to Managua, which was built on a flat plain on the shore of Lake Managua. Government buildings lined the crests of hills behind the plain. Managua had a number of evangelical Protestant churches, including one with striking architecture. Even though it was a capital city, the narrow streets gave it the look of a country town. Houses facing the street were long and narrow, with rooms one behind the other separated by pillars and archways, so I could stand on the sidewalk and look right through each house. They were cozy and comfortable. I liked Managua. I spent the night there.

Once again I was on a bus by 6:00 AM that took me along the narrow Pacific coast of Honduras to El Salvador, where it followed a valley through very hilly farming and grazing country. The landscape was dominated by a very high volcano that was perfectly symmetrical. We passed other volcanoes, grass-hut villages, and many oxcarts with solid wooden wheels all the way into San Salvador. It was a surprisingly large city for a small country. I spent the night at a Pension Hotel for two dollars.

My bus left for Guatemala at 8:30 AM. The country around San Salvador was quite lush, but farther north it became dryer and remained so all the way to Guatemala City. The bus crossed a small suspension bridge over a narrow gorge at the Guatemalan border, and traveled through rocky and hilly terrain that was almost mountainous. Smooth stones littered the landscape, reminding me of the stones scattered over the desert in eastern Jordan. In Guatemala City, I met a French Canadian who was studying the ethnic mix of Indians, Negroes, and Spaniards in Guatemala. He said that Castroites were still strong, even after the abortive Marxist revolution a decade earlier. I was reminded of Joe McCarthy's warning from the Senate floor that "Communists were seeping, seeping through Guatemala…" Indeed, Communist guerrillas had come out of the jungle into the city, so it had become a jungle where people couldn't walk in safety after dark. Much of the unrest came from students and Spanish-Indian "Mestizos" who worked as serfs on the large ranches and plantations of the landed Spanish grandees. These aristocrats were violently anti-clerical and burned with hatred toward everyone, according to an Austrian agricultural expert I met at the hotel. Their only strong opponent was the Catholic Church, which had earned the loyalty of the peasants. The students were mostly Marxist atheists. The greatest fear of the landowners were the many children of the peasants. Even today (2014), the World Bank is trying to "castrate and spay" the peasants of Guatemala by holding developmental loans and medical care hostage to surgical and chemical abortions that slash the birth rate.

I was up at 4:00 AM to catch the early morning bus from Guatemala City to the Mexican frontier. Most of the way it passed beneath the rims of active volcanoes, one after another, all belching smoke. We were truly "under fire" the whole time. Side vents on some volcanoes were also billowing smoke and fire. Rivers of bright lava wound their way down the dark conical slopes. At each village, Indian women and children ran out to our bus with sliced watermelons on pans balanced on their heads and soda pop, ice cream, and tortillas on trays or in baskets. All of them were happy and grinning broadly. We stopped at the frontier and walked into Mexico on a long railroad trestle that spanned a shallow river. I took a taxi to Tapachula, where I caught a bus to Mexico City. All through Central America, the east coast was relatively undeveloped jungle inhabited by Indians. Most people and most development were found in the interior and along the west coast.

The bus from Tapachula to Mexico City wound all night and most of the next day through rugged, rocky country overgrown with cactus. Adobe farmhouses with tile roofs all had beehive bread ovens on their front porches. Farming that land had to be tough work. The country got flatter and greener as we approached Mexico City. It was one of the five largest cities in the Western Hemisphere in 1967. Today it is the largest by far. The great cathedral stood in the center of the city. It had been constructed from stones that once ran red with the blood of beating hearts ripped from the naked chests of children by High Priests atop the pyramid temple of Huitzilopochtli, the Aztec god of war. In the memorable words of William H. Prescott, in his monumental 1843 three-volume work, *History of the Conquest of Mexico*, "Children, for the most part infants, were offered up. As they were borne along in open litters, dressed in their festal robes, and decked with the fresh blossoms of spring, they moved the hardest heart to pity, though their cries were drowned in the wild chant of the priests, who read in their tears a favorable augury for their petition…Five priests secured (their) head and limbs; while the sixth, clad in a scarlet mantle, emblematic of his bloody office, dexterously opened the breast of the wretched victims with a sharp razor of itztli, a volcanic substance hard as flint, and inserting his hand in the wound, tore out the palpitating heart. The minister of death, first holding this up towards the sun…cast it at the feet of the deity to whom the temple was devoted, while the multitudes below prostrated themselves in humble adoration…(the dead bodies), were served up in an entertainment. This was not the coarse repast of famished cannibals, but a banquet teeming with delicious beverages and delicate viands, prepared with art…"

A bus left Mexico City at 7:30 PM for Nuevo Laredo on the Rio Grande. I took it. During the night ride I could see the Southern Cross above one horizon and the North Star above the opposite horizon. By morning, my bus had descended the high plateau of central Mexico and passed through semi-arid land that was cultivated only in places all the way to the Rio Grande. We arrived in Nuevo Laredo in the early afternoon. It was a prosperous town with many souvenir shops that catered to American tourists. I walked across a bridge over the Rio Grande, which was only a narrow stream, but it must have seemed "grande" to Spanish conquistadores who had been trekking across hundreds of miles of dry country. The Texan customs official in Laredo on the American side went through everything in my pack. When I mentioned the microfilm in my hatband he said, "If I really thought you had something I would have all your clothes off!" He talked like Slim Pickens, the Hollywood actor who as Colonel "King" Kong rode the atom bomb down over Russia in *Dr. Strangelove*.

Laredo was a Mexican town. South Texas was dry, flat, overgrown with mesquite and cactus, dotted with oil pumps, and inhabited by Mexicans. The land became greener farther north. I arrived in Dallas at 5:00 AM and caught a bus to Kansas City. By 10:00 AM it crossed the Red River into Oklahoma, where I began to see Indian features in the faces of some people. President Andrew Jackson had forcibly transferred the five civilized tribes of the southeastern states, the Chickasaw, Choctaw, Creek, Cherokee, and Seminole Indians to Oklahoma, then thought to be the Great American Desert, in defiance of a Supreme Court ruling stating they could remain on their ancestral lands. Jackson said, "The Supreme Court has made its ruling. Now let's see it enforce it." The expectation was these Indians would not survive. Survival was indeed tough until they acquired the skills of other Indians on the Great Plains. History was repeated a century later, when Okies themselves migrated in distress to California during the Great Depression. But an ocean of oil lay under the Oklahoma prairies for those who remained. I listened to two Okie women visiting on the bus. One said, "There is a time to live and a time to die, and you do the one until it's time to do the other – and that's all there is to it." God and preachers were a favorite topic of these people. When we crossed Kansas it was the same story. My bus arrived in Kansas City at 10:00 PM and I boarded a bus bound for Chicago.

As dawn broke on 28 May 1967, the bus was crossing central Illinois. It crossed the canal connecting the Great Lakes to the Mississippi River near Joliet, and passed the state penitentiary. By 10:00 AM, I was standing on the corner of State and Randolph in downtown Chicago, where I had begun

my Great Adventure almost a year earlier. I heard myself saying, “I’ll be…the Earth *is* round!”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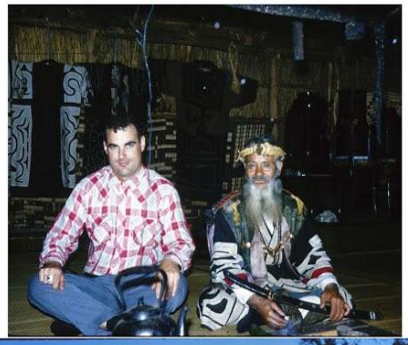
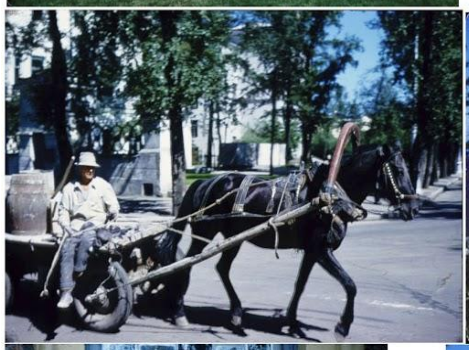
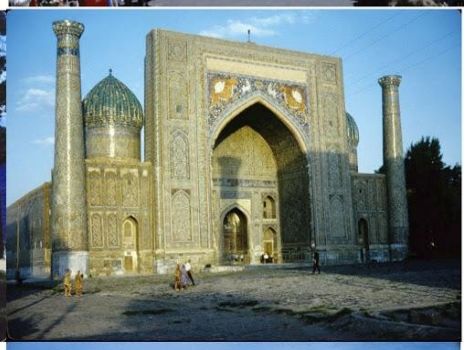
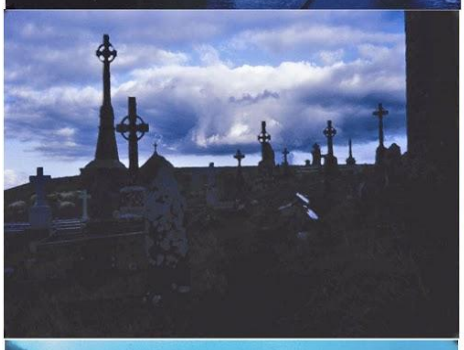




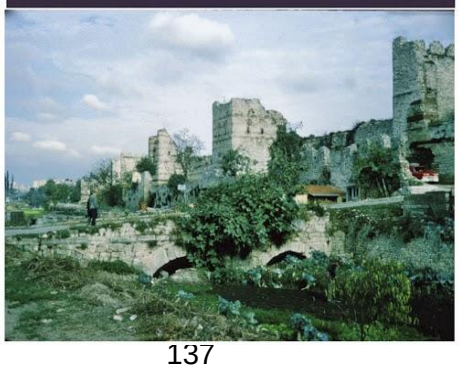











Photos for Chapter 3: The Great Adventure

Sheet 1: Asia and Europe

Photos are numbered from left to right and from top to bottom.

1. Beginning of the 1671-mile Alcan Highway at Dawson Creek in Alberta, Canada.

2. I meet an Ainu chief in the Ainu village of Shiraoi on Honshu Island near Hokkaido, Japan.

3. On the Trans-Siberian Railroad at Khabarovsk, "sister city" to Yokohama, Japan.

4. "One-third of a Troika" in Irkutsk, Siberia, on the Trans-Siberian Railroad.

5. A log *dacha* house on Lake Baikal, along the Trans-Siberian Railroad.

6. The chief Madrasa of the Registan in Samarkand, Soviet Central Asia. Tigers are mosaics.

7. A Communist "Tribute to Atheism" poster in the Ukrainian city of Rostov, USSR.

8. Russians lined up to see Lenin's corpse in Red Square, Moscow. "Is he really dead?"

9. The wall of the Novgorod Kremlin, seat of the Republic of Novgorod when Mongols ruled the rest of Russia.

10. Downtown Murmansk, Russia's year-round seaport far north of the Arctic Circle.

11. Approaching Brandenburg Gate and freedom. The photo is from East Berlin.

12. Farmers from western Ireland march on Dublin past O'Connell's statue. Note the Irish faces.

13. Churchyard at the Rock of Cashel in Munster, Ireland. Note the Celtic High Crosses.

14. I'm atop the Mound of the Hostages on the Hill of Tara, seat of the High Kings of Ireland.

15. A side-wheeler paddleboat on the Danube River approaches the Iron Gate.

16.The Iron Gate (west entrance) where the Danube passes through the Carpathian Mountains.

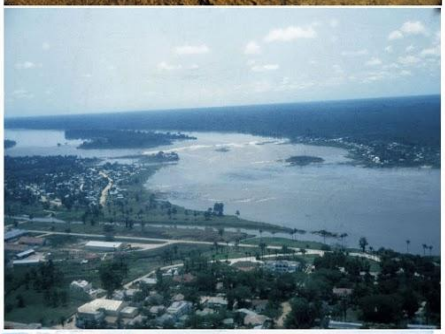
17. The walls of ancient Byzantium, now Istanbul, on the Golden Horn between Europe and Asia.

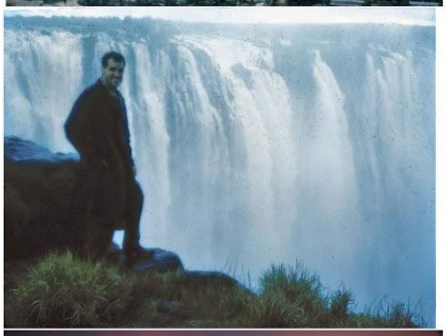
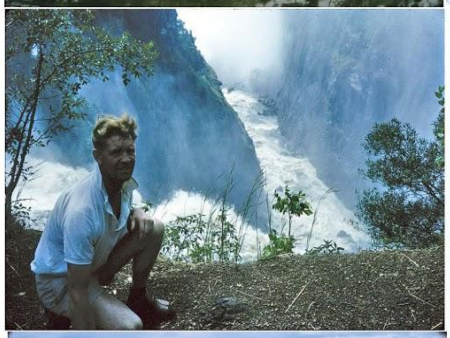
18. My "Tower of Babel" in northern Iraq, a Moslem ziggurat near Samarra on the Tigris River. I climbed the winding stairs to the top as Nimrod must have climbed the ancient Tower of Babel.

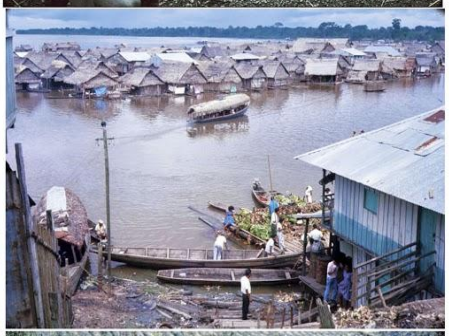










Sheet 2: Africa and Latin America

1. The Colossi of Memnon near Luxor in Upper Egypt.

2. My bus climbs the 10,000-foot Abyssinian Plateau from Aksum to Gondor in Ethiopia.

3. The Blue Nile Falls near Lake Tana where the Blue Nile begins in Ethiopia.

4. Road from Guba to Moyale where Shifta "terrorists" blew up a military troop truck in Ethiopia. We arrived just after the land mine exploded, killing seven soldiers. It could have been our truck.

5. A cliff of ice towers above me at the Kibo Summit of Mount Kilimanjaro, an active volcano. These ice cliffs are now gone.

6. T. Hughes on the Top of Africa at the marker on the rim of Kibo Crater on Mount Kilimanjaro.

7. The Congo River at Kisangani, formerly Stanleyville, in the Democratic Republic of the Congo.

8. The jungle along the Congo River from Kisangani to Kinshasa on a side-wheeler river boat.

9. A Congo map overlies the Medieval Holy Roman Empire. My route through the Congo is dotted.

10. I'm looking across the Zambezi River Gorge at Victoria Falls. Photo by Larry O'Connor. Shortly after Larry took this picture, I lost my balance and did a windmill with my arms to keep from falling into the gorge. Too bad he didn't take *that* picture.

11. Below Victoria Falls the Zambezi River Gorge zigzags for miles. A whirlpool forms at the end of each bend. Larry O'Connor, an Irishman working in Zambia, is above the first bend.

12. A Brazilian farm family on the dirt road recently hacked through the Amazon jungle from Brasilia to Belem at the mouth of the Amazon.

13. Sunset on the Amazon between Leticia, Columbia, and Iquitos, Peru.

14. The floating "slum" of Iquitos, Peru, that rises and falls with Amazonian floods.

15. My "perch" on the *Huallaga* going 750 miles upriver from Iquitos to Pucallpa in Peru. I imagined Humphrey Bogart pulling the *Huallaga* as he did the *African Queen* in that movie.

16. Glaciers crown the western Andes west of Canta on the new road from Pucallpa to Lima in Peru.

17. I meet an Inca Indian in Ecuador. See how the high altitudes shrink man and beast.

18. Volcanoes west of Guatemala City, as seen from the Pan American Highway.

CHAPTER 4 – I BECOME A GLACIOLOGIST

The red line on the global hemispheres for Chapter 4 displays my first trip as a glaciologist to "the storehouse of the snow" atop Mount Logan in the Yukon Territory of Canada.

Have you entered the storehouse of the snow? -- Job 38:22

Back at Northwestern, I discovered that my advisor, John Brittain, hadn't read my doctoral dissertation. Now that I had returned, he began reading the thing, all 567 pages of it. That gave me time to begin job interviewing. Over the next few months, I visited several places and got good job offers. One was from Rocketdyne, a division of North American Aviation. It was trying to develop rocket nose cones that were resistant to heat and oxidation, which were two properties of the nickel-aluminum alloys studied by Dr. Brittain's students. The airplane landed at Los Angeles airport and I took a cab to the Rocketdyne laboratory in Orange County. The airport was on high ground and I noticed that the air in the valley below was orange. I asked the cab driver, "Is that why this is called Orange County?" He told me it was air pollution. I decided right away I didn't need to work there. Another was from TRW (Thompson, Ramo, Wooldrich, the corporate founders). The most challenging was from the Los Alamos National Laboratory, which was looking for someone to supervise developing an alloy from which nuclear engines could be constructed. It had to be temperature and oxidation resistant, and have the proper nuclear cross-section to maximize the efficiency of nuclear reactions. I liked Los Alamos. It was a top-of-the-line facility and I was taken on a short drive to the edge of the canyon on the upper Rio Grande. At that spot, it looked like a smaller version of the Grand Canyon. I liked the wide open spaces and the Spanish cultural heritage of northern New Mexico. The most accommodating offer was from Inland Steel in East Chicago, Indiana. The head of the metallurgical laboratory there was Frank Garofalo. He was a personal friend of John Brittain, and he took a special interest in me. But by a strange twist of fate, I turned my back on all of these unique career opportunities.

Here I should say an advantage of a doctoral dissertation 567 pages long is my committee might not actually read it, but could never admit they hadn't. John Brittain, Hans Weertman, Jerome Cohen, and Donald Whitmore were my committee, and all have headed the Department of Materials Science. My dissertation was an example of what I later called Hughes' Law: "Bullshit is the grease on the axle of the world, and without generous application of same, the world will come to a grinding halt." Being unable to

challenge that, perhaps because they never read a demonstration of it in my dissertation, they grudgingly made me a Doctor of Philosophy.

The Department of Materials Science had moved to the end of the Technological Institute that faced Lake Michigan as I was finishing my master's research and beginning my doctoral research. That end was also a short walk from Deering Library, a big sandstone building that reminded me of Noah's Ark and was the main library at Northwestern. During the summer, some of us students in the department would sunbathe on the beach during lunchtime. Franz Felberbauer, the Austrian graduate student, and I would lie together on the sand in swimsuits, his brief to display a thin body, mine trunks for a bulky body. There on occasion he would educate me on the fine points of Aryan racial theory, he being the ideal type. To keep those conversations from being too one-sided, I went over to Deering Library and immersed myself in the turgid literature on that subject. One of the luminaries of the time was Carlton Stevens Coon, who produced a book, *The Races of Europe*, from his doctoral dissertation on racial theory. An American named Ripley had published an earlier book by the same name in which he had proposed three European races. The Nordic "master race" consisted of the tall, slim, pink, blue-eyed blondes of northern Europe ("I'm pretty pure Nordic," Franz informed me, although his eyes were light brown), the Mediterraneans were short, swarthy, brown-eyed brunettes who huddled on the shores of the Mediterranean Basin, and the Alpines were the squat, stocky, ruddy people in the central European highlands. Coon had subdivided Ripley's classifications and in later books he had classified races in the rest of the world. During my Northwestern years, Coon had proposed a new theory of human origins in which, to oversimplify in terms the average American could appreciate, the White race was related to chimpanzees, the Black race was related to gorillas, and the Yellow race was related to orangutans (never mind Orientals have black hair and orangs have red hair). Coon was much more subtle than that of course, but people got the general idea. The human race wasn't really one race after all, because its three main branches had separate origins. Once again the Bible was wrong!

Yes, I had wondered why a man named "Coon" would write on this subject. As I noted in Chapter 2, Coon had been invited to Northwestern to spread his new gospel and I attended his lecture. During the following discussion, I thought about asking him if he had ever considered changing his name. Instead, I asked him if he automatically classified people into one of his racial niches when he first met them. He assured me that he did not. Afterward, I followed just behind him and his disciples as they were walking along the sidewalk outside. Someone approached them and as he passed, I overheard Coon say to the others, "That was a classic Alpine!" So he *did* classify people as soon as he saw them, despite his denial.

Browsing through the stacks in Deering Library had become a pleasant diversion from the minutiae of materials science, and I would make the short walk from the Technological Institute whenever I felt the walls closing in on me. On one occasion, shortly before I began my trip around the world, I spotted a slim volume gathering dust on one of the more remote recesses of the top floor in Deering Library. It was *Those Astounding Ice Ages*, and its author was a retired architect named Dolph Earl Hooker. He had spent twenty-seven consecutive days on the glaciers of Alaska and came down, like Moses from Sinai, with the answer to the riddle of the Ice Ages. Despite that discovery, nobody had checked-out his book. But I did.

Hooker told a good story. Earth's surface was originally so hot that water could exist only in the primordial atmosphere, where it formed thick cloud layers that rotated about the planet in belts like those observed today on the outer planets, notably Jupiter and Saturn. The rapid rotation caused the cloud layers to flatten over the poles, where the centrifugal force caused by rotation was too weak to overcome the gravitational pull of Earth. When the planetary surface had cooled sufficiently, these water-rich cloud belts would be pulled down over the poles, one after the other, each causing an instant ice age because the

high-latitude precipitation would fall as ice crystals. Precipitation in lower latitudes fell as rain. This was how the ocean basins filled with water. The last ice age took place when the last cloud belt was pulled down. Precipitation in warmer mid latitudes fell as rain instead of snow. This downpour was recorded in the Bible as Noah's deluge and has been preserved in similar accounts by the Aztec Indians, the Australian aborigines, and the ancient Chinese. The cloud belts had previously hidden the sun from people on Earth. After the final downpour, however, people would see the sun for the first time and would also see the first rainbow, because sunlight was refracted through water droplets in the air. God promised Noah that He would never again destroy the world by water, and the rainbow would always remind Him of His promise. Of course there could never be another deluge after the last belt of clouds was pulled down, so God's promise was validated by Hooker's explanation for the Ice Ages. The Bible was right after all!

I showed Hooker's book to Hans Weertman. Hans taught dislocation theory and fracture mechanics in the Department of Materials Science. We students knew that he had published papers on glaciers and ice ages, but he made no mention of that in his classes. I for one had no idea just how big his reputation in glaciology was. A few days later, Hans returned the book and gave me some reprints of his own papers that showed how ice ages "really" came about. They were fully embellished with mathematics, something Hooker had studiously avoided. The "real" cause was cooling and warming of Earth's surface in high latitudes as Earth's rotation axis tipped toward and away from the sun in a regular fashion. During cooling half-cycles, winter snow didn't completely melt in the summertime, so snowfall built up from year to year until ice sheets formed over the continents in high latitudes and advanced into mid latitudes. They retreated and vanished, except in Greenland and Antarctica, during warming half-cycles. That was the conventional thinking that Hooker claimed was poppycock, but Weertman waved equations at Hooker's arm waving.

Not long after I returned from my trip around the world, Weertman got a letter from Colin Bull, the director of the Institute of Polar Studies at The Ohio State University. Bull wanted to know if Hans could recommend someone from Northwestern to be a field assistant on one of the Ohio State expeditions to Antarctica. Hans showed the letter to me, since I was the only student at Northwestern who had expressed any interest in ice sheets to Hans, solely because I had read Hooker's book, a book I would not have seen if I hadn't decided to look into Franz Felberbauer's notions of Aryan racial supremacy. My Great Adventure had instilled a desire to visit even more exotic places, and the prospect of seeing the Antarctic continent appealed to me. I was single and had just finished my education, but I had not yet committed myself to any particular job. If ever there was a time in my life when I could see Antarctica with minimal disruption of my career, this was it. I told Hans that I would indeed be interested in the job of field assistant, even though the pay was trifling compared to the salaries I had been offered after my interview trips. Hans must have written a very positive letter in reply to Bull, because I soon got a letter myself in which Bull offered me a full-time hard-money position in the Institute of Polar Studies as a glaciologist. That was more than I expected. I contacted the people who had made me other job offers to see if they would hold them open until I returned from Antarctica after one field season. Frank Garofalo was willing to keep the job at Inland Steel open. I decided that I couldn't lose, so I accepted Bull's offer, while telling him that I had another job available if we mutually decided that I was not meant to be a glaciologist.

John Brittain called me into his office and said, "When you came here, I recognized a diamond in the rough and I vowed that I would put some polish on you. Now that you're leaving, I regret to say that I failed utterly." I walked away from Northwestern, not even bothering to pick up the certificate stating that I was a Doctor of Philosophy (it would have cost me twenty dollars), went down to Chicago, bought a brand new two-door lime gold l968 Ford Mustang V8 with a black vinyl roof (a car I kept for 40 years), drove to Ohio, and never looked back. During my trip around the world, I sent letters to Paw, who was

living in a Catholic nursing home called Maryhouse in Pierre, South Dakota, and to Carolyn Byrne (Tyrannosaurus Rex in my Round-Robin letter to my Mother's family), whom I had dated before the trip. I also sent Carolyn presents from time to time; an Ainu carving from Japan, a fur hat from Russia, a wool scarf from Ireland, and a painting of Watutsi dancers from Burundi. All of these things were handmade by local artisans and artists. I continued to date Carolyn after my return, but something had changed. Carolyn wasn't quite her old bubbly self. She was a bit more reserved, and sometimes a certain sadness crept into our conversations. On our last date, we were sitting in the Mustang and a popular tune of the time, *Different Drum*, by the Stone Ponies, came over the car radio. In the song's refrain, Linda Ronstadt, the lead singer, sang:

So goodbye, I'll be leavin',
I see no sense in this cryin' and greavin'.
We'll both live a lot longer
If you live without me.

Carolyn said, "That's our song." Then she told me that she had been dating someone she met at the Chicago Marina while I was gone. She said he was "broody and stormy" and he would take her sailing on Lake Michigan. They loved it. They had much in common. She and I were from such different worlds. Etcetera. Etcetera. Etcetera. She let me down as gently as she could. Broody beat bullshit.

I owe John Brittain and Northwestern a debt that I can never repay, and all my memories from those days are fond ones. But I was embarking on a career that, except for Hans Weertman, would remove me forever from the Northwestern milieu. As an aspiring glaciologist, I was about to acquire a reputation of always challenging the accepted wisdom, of advocating processes that are just the opposite from what seems obvious. They were all posed as questions. Can ice rise up from the base of ice sheets as giant warm plumes, as well as sink slowly under the weight of snowfall from above? Is the part of the Antarctic Ice Sheet lying in the Western Hemisphere disintegrating? Does an ice sheet undergo irreversible gravitational collapse when its convex surface becomes concave? Do ice sheets form by rising up from the sea and spreading onto coastal lowlands, instead of forming in mountain highlands and advancing into lowlands? Is permafrost ground in high Arctic latitudes really the dirty basal ice layer of former ice sheets? Do fast currents of ice called ice streams really pull ice out of ice sheets? Can these ice streams turn on and off abruptly, thereby allowing rapid advance and retreat of ice-sheet margins? Can ice sheets self-destruct and thereby force rapid changes in global climate? On the face of it, all of these questions sound as fantastic as Hooker's ideas about the origin of Ice Ages, but Weertman gave me just enough training in equation waving to keep these ideas from being dismissed as arm waving. That's my lineage as a glaciologist; half Hooker, half Weertman, and nobody knows who has the upper hand, me least of all.

I was unable to order *Those Astounding Ice Ages*, so I wrote Hooker to ask how I could get a copy. He sent me one that he autographed, along with a short personal letter from Akron, Ohio, that was dated l3 June l966. No publisher would print his book, so he published it in the vanity press and sent copies to university libraries around the country. Thank God, Northwestern University was on his list. His letter opened with the sentence, "Your suspicion about the reception my book has received from the holy of holies of the Geological Fraternity is correct." It closed with the sentence, "Thank you for your studious interest in my little book." Thank you, Dolph Earl Hooker, for opening the door to a wonderful career.

I arrived in Columbus, Ohio, in January of l968 and rented a room in the basement of a house just off of High Street opposite the main entrance to The Ohio State University, and a short walk from Mendenhall Laboratory, which housed the Department of Geology and the Institute of Polar Studies. The

founder of the Institute was Richard P. Goldthwait, who was also head of the geology department. Goldthwait's father was J. W. Goldthwait, a legendary glacial geologist who had followed in the footsteps of Louis Agassiz, the Swiss naturalist who studied evidence of former ice sheets in Europe and North America and is generally regarded as the Father of the Glacial Theory. Deposits of loose rocky material containing sand and clay were draped all over northern Europe and were also widespread in northeastern North America. They were often arranged in looping belts and covered patches of bedrock that had been polished and scratched, presumably by this material before it was deposited. Rocks in the material were often different from the polished bedrock, and could sometimes be traced to bedrock outcrops farther north. Conventional thinking of the nineteenth century ascribed these deposits and the scratched bedrock as evidence of the Biblical flood, when swift currents formed by the rising and falling waters transported the material, dragged it over the landscape, and finally dumped it. For this reason, the material was called drift. From his observations of similar piles of material looping around the ends of valleys in the Alps, where glaciers had been retreating for many decades, Agassiz surmised that glaciers had transported the drift material and the outer limits of the deposits marked the farthest advance of glacial ice. When the glacial drift covered large areas, such as across northern Europe and northeastern North America, the glaciers had to be equally large. They had to be virtual sheets of ice that covered much of these continents in the past. This concept became known as the Glacial Theory. Many observers contributed to it, but Louis Agassiz promoted and publicized it as aggressively as Thomas Huxley advocated Darwin's theory of evolution.

During the International Geophysical Year from l957 to l958, American scientists began extensive explorations in Greenland and Antarctica, including drilling deep core holes into the huge ice sheets covering these lands. In Antarctica, the explorations included tractor-train traverses over the vast interior of the Antarctic Ice Sheet. These traverses continued for a full decade and led to discoveries of coal, fossil ferns, and fossils of amphibians and reptiles that proved Antarctica had a temperate climate during the Paleozoic Era, over 225 million years ago. Similar fossils had been discovered on other continents of the Southern Hemisphere, and these finds in Antarctica provided conclusive evidence that all Southern Hemisphere continents had once been joined together as a single supercontinent called Gondwanaland. It had split apart during the Mesozoic Era, between 225 and 70 million years ago, with the fragments drifting to their present-day positions during the Cenozoic Era, the last 70 million years. The Ohio State University had been involved in these early explorations and discoveries, and Richard Goldthwait had argued that all the data collected from these expeditions be housed at a single location that was available to all the participating scientists, and other interested investigators. That repository was to become the Institute of Polar Studies.

When I arrived in l968, Colin Bull had replaced Goldthwait as director of the Institute of Polar Studies. Goldthwait was a small man who, by then, had silvery white hair to set off his bright blue eyes and ruddy complexion. Bull, in contrast, was almost a caricature of John Bull, the symbol of British imperialism. He was short and stocky, but not fat like the cartoon character, and he had a bulldog's tenacity about him that was mellowed by a robust sense of humor. I had heard that he spoke Welsh before he learned English, but after he died his wife, Gillian, didn't confirm that. What I do know is that Colin Bull earned his station in life, he wasn't born into it. He was the only glaciologist in the Institute in l968, but he was training graduate students in that profession and he had hired me to become one. Colin Bull was one of those rare people who sees as his main professional responsibility promoting the careers of those around him. He certainly did that with me. It was evident from his early career as a physicist assigned to a British expedition to Spitsbergen. I wrote the review of his book, *Innocents in the Arctic*, recounting that expedition, and of his other book, *Innocents in the Dry Valleys*, where he demonstrated the same characteristics in Antarctica.

Colin's number one man was John Splettstoesser, who looked very serious but had a mischievous

streak and a sly humor. We both were on the tall side with black hair and blue eyes. John's wife Judie, a striking brunette, was his opposite in temperament. No nuances with her. They often invited bachelors like me to their home for Judie's fantastic meals. Their two girls, Edith and Brenda, were copies of them. Brenda looked like a slim Judy. Edith was just a kid, but she looked like John. John looked like the Hollywood actor, Robert Stack. He edited all manuscripts coming out of the Institute of Polar Studies. He also edited an early version of *Ice Man*. In later years, he was a popular lecturer on cruise ships to polar regions. Brenda and Judy took lessons in belly dancing, and treated guests to demonstrations. When I began courting the lady I eventually married, Beverly Barr (who, like Judy, was stout and was a terrific cook), we had great times together at their house and at German restaurants in Columbus. We all kept in touch long after Bev and I married and moved to Maine.

My arrival was completely overshadowed by J. Tuzo Wilson, who was conducting a seminar during the spring quarter for the geology department. The seminar was on what was becoming known as the New Global Tectonics, or with less fanfare, plate tectonics. Within geology, tectonics was in the throes of a scientific revolution every bit as far-reaching as occurred in the last century with the Glacial Theory. Tuzo Wilson stood at the center of this controversy. The long-held view was that the continents had always been in their present-day locations, and had only moved up and down vertically. Shallow inland seas drained when continents moved up to form mountain ranges, erosion lowered the mountains, and the eroded material was deposited in shallow water on the continental shelf. As these sediments grew thicker over time, the sedimentary wedge pushed down the continental shelf and created load stresses that produced fissures in Earth's crust. Volcanic eruptions along the fissures brought hot ash and lava to the surface in a line of volcanoes at the outer edge of the sinking sedimentary wedge. The volcanic activity introduced a new cycle of mountain building that drained the shallow water from the sedimentary wedge and was followed by a new cycle of erosion and sediment deposition. The sedimentary wedge was called a geosyncline, and this explanation for Earth's tectonic history was called the Geosynclinal Theory.

The first serious challenge to the Geosynclinal Theory was by a meteorologist, Alfred Wegener, who was the son of an evangelical preacher. He had crossed the Greenland Ice Sheet in 1913, so he qualifies as an early glaciologist. He was in the German army during World War I and, while recovering from wounds, wrote *The Origins of Continents and Oceans*, which was published in 1915. Drawing from geography, biology, geology, and geophysics, he argued that all the present-day continents had once been part of a supercontinent which he called Pangea, a Greek word meaning "All Earth." He drew particular attention to faunal, floral, and geological linkages between continents across the Atlantic and Indian Oceans, and the curious geographical fit of continents on opposite sides of the Atlantic, when the Atlantic Ocean is closed on a globe. He argued that Pangea split apart at the end of the Paleozoic Era, when these linkages existed, and the thick continental fragments ploughed through thin oceanic crust to arrive at their present-day locations as the continents we know today. His mechanism for continental drift proved to be the Achilles heel of his argument, as geophysicists quickly calculated that no force existed that would make continents plough through oceanic crust. Wegener's theory lay dormant for a half century, until new geophysical investigations showed that continental drift, like glacial drift, was a reality. Only Wegener's mechanism to account for it was wrong. J. Tuzo Wilson and other geophysicists were seeking a new mechanism. Thermal convection in Earth's mantle was a leading contender. Continents split apart above rising convection plumes and were carried to sinking plumes where they collided to make mountain ranges. However, thermal convection is observed only in fluids, like the atmosphere and oceans. Earth's mantle is solid rock.

Alfred Wegener died tragically in 1930, during his fourth expedition to Greenland. Wegener was close to being a Renaissance Man. Geographers, geologists, geophysicists, botanists, and meteorologists all have a claim to him. So do glaciologists. He had been among the first to cross the central Greenland Ice Sheet as part of a German expedition that determined ice was over 1800 meters thick at its interior

camp. An expedition member who lost his toes to frostbite was Fritz Loewe. Fritz spent summers at the Institute of Polar Studies during my years there, and continued to publish in the glaciological literature. Perhaps his last paper, *Schelfeis oder Eisshelf* (Shelfice or Iceshelf) was written in German there. It was my privilege to have known him, if only slightly.

Lack of a widely accepted theory to explain continental drift trumped observational evidence for it. As prizefighters know, the judges of a match will not dethrone the champion in a close fight. The champion must be either knocked out or defeated decisively. So it was when continental drift attempted to dethrone the Geosyncline Theory as an account of how tectonics work. The championship bout was a symposium on continental drift held by the American Association of Petroleum Geologists in l928. The chairman, a Dutchman with an endless name, W. A. J. M. van Waterschoot van der Gracht, declared a draw and the Geosyncline Theory retained its crown. As Dott and Batten observed decades later in their l970 book, *History of the Earth*, it was a triumph of the theoretical viewpoint that "Unless we now have an explanation of how it could happen, it could not have happened," over the observational viewpoint, "If it has happened, it can happen." Such is human vanity.

Providing an adequate mechanism took time. Decades. Radioactive elements had been discovered at the turn of the century, and these elements were known to be present in rocks on Earth's surface that had once been at great depths. Radioactive decay generates heat, so the view was accepted that Earth's mantle was being heated internally by radioactive decay. This demolished Lord Kelvin's careful calculation, based on cooling by thermal conduction of heat to outer space from an originally molten Earth, that our planet was only between 8000 and 20,000 years old. In 1926, an Irish scientist, John Joly, developed the idea that radioactive heat in Earth's mantle would generate thermal convection cells that would transport heat to Earth's surface by mass transport much more efficiently than thermal conduction could transport heat by transmitting vibrational amplitudes of hot atoms about their fixed sites in a crystal lattice. Proponents of continental drift, notably S. Warren Carey and Arthur Holmes, geologists respectively from Australia and Scotland, seized upon mantle convection to explain continental drift. When rising plumes of hot mantle rock struck the underside of continents, mantle convective flow would be diverted laterally, this flow would stretch and thin the continents, causing them to rift, the rifted fragments would then be carried like rafts by the convection currents to sites where convective flow returned to the deep mantle, the continental fragments would collide at these sites but would not sink because they were composed of less dense rock, and the collisions would crumple the colliding continental margins, thereby producing folded mountain ranges. Mantle convection would shut down after sufficient heat had been transported from the mantle to the surface, and continents would remain at these new locations until enough radioactive heat had accumulated within the mantle to trigger a new cycle of mantle convection and repeat the cycle. However, mantle convection could also be invoked to explain the uplift and mountain building phase of geosynclines in the old Geosyncline Theory. Ascending hot plumes of mantle rock could uplift geosynclines and provide the hot magma expelled by the line of volcanoes along geosynclines. Therefore, the concept of mantle convection did not deliver a knockout punch.

As late as 1959, English physicist Harold Jeffreys could write with full confidence in the fourth edition of his monumental work, *The Earth*, of continental drift: "It is an explanation which explains nothing which we wish to explain." Similarly, in 1988 the U. S. State Department had perfected a long-range foreign policy based on the confident assumption that the Soviet Union was a permanent part of the political landscape. One year later the Soviet Union collapsed without a shot being fired. Like Wegener's supercontinent, Pangea, only its fragments survive today.

A year is less than a second in geology. A decade isn't much more. By 1969 the Geosyncline Theory was rubble on the geological landscape. Continental drift reigned supreme. The King was dead;

long live the King. What delivered the knockout punch? There was no single punch. A barrage of punches were delivered until the Geosyncline Theory could no longer answer the bell. In 1952, an English Nobel laureate, P. M. S. Blackett, described the ability of his astatic magnetometer to measure extremely weak magnetic fields (punch one). By 1966, W. M. Elsasser and E. C. Bullard had perfected the electromagnetic dynamo theory to explain Earth's dipolar magnetic field (punch two). Blackett and many others used his astatic magnetometer to measure the magnetic dipole in igneous rocks all over Earth's surface at the time when the rocks cooled through the temperature below which the dipole was imparted by Earth's magnetic field (punch three). The ages of those rocks could be determined by the known rates of radioactive decay for minerals in the rocks that contained radioactive isotopes of certain elements (punch four). These data showed that Earth's magnetic field had reversed polarity repeatedly over geological time, thereby providing reference events that could be used as an independent dating technique (punch five). According to the dynamo theory, Earth's magnetic field is caused by the interaction of Earth's rotation with thermal convection in Earth's core, so that reversals of Earth's magnetic field pointed to episodic convection in Earth's core (punch six). These data also showed that continents must have rotated and drifted latitudinally over geological time, which pointed to thermal convection in Earth's mantle in addition to convection in the core (punch seven). Techniques were perfected that also determined magnetic dipoles in sedimentary rocks which aligned with Earth's magnetic field when the sediments were deposited, and those dipoles could be used to determine rates of continental drift (punch eight). Metamorphic rocks were shown to have a chemical remanent magnetization that could be used for the same purpose (punch nine). Longitudinal continental drift was established by measuring dated reversals of Earth's magnetic field preserved in igneous rocks on the ocean floor as ships traversed across mid-ocean ridges, with the dating of these reversals showing that the ocean floor originated as lava expelled from rift valleys along ridge crests, so that oceanic crust became older from the rift valleys to the continents on opposite sides of the ocean (punch ten). "One. Two. Three...Eight. Nine. Ten. You're Out!"

J. Tuzo Wilson was a central figure in the discoveries that dethroned the Geosyncline Theory. His genius was intuitive, not analytical or experimental. Four of his papers are especially noteworthy. In 1963, Wilson proposed that the ages and direction of volcanoes in the Hawaiian Island chain recorded the motion of the Pacific Ocean floor over fixed thermal convection plumes that originated deep in Earth's mantle. Triple junctions where three ocean-floor rift valleys met were also recognized as "hot spots" on Earth's surface above rising mantle convection plumes, thereby establishing the pattern of thermal convection in Earth's mantle. In 1963, Wilson also introduced his theory of orogenic cycles. Rising mantle convection currents rifted both continental and oceanic crust, with new oceanic crust forming between rifted continents, so that the continents were transported laterally until they collided, thereby producing mountain ranges along the crumpled colliding margins, while the heavier ocean crust dove under the lighter continental crust to produce trenches on the ocean floor that paralleled the mountain ranges. This has been called the Wilson Cycle. In 1965, Wilson showed that if the ocean floor moved from the rift valleys along oceanic ridges to trenches along continental orogenic belts, these movements on a spherical surface required that Earth's moving crust had to consist of relatively rigid plates that formed along rift valleys, were consumed along oceanic trenches, and moved past each other along lateral shear zones that formed between the rifts and the trenches, and in fact offset segments of the rifts and the trenches. He called these shear zones transform faults because they transformed Earth's crust into a known number of tectonic plates. This insight completed the geological revolution that replaced the Geosyncline Theory with plate tectonics, giving rise to The New Global Tectonics. In 1966 Wilson presented evidence that the Atlantic Ocean had opened in the Early Paleozoic before it closed in the Late Paleozoic, when the supercontinents of Laurasia and Gondwanaland collided to become Pangea. This meant that continental drift probably occurred throughout geological time, so that the breakup of Pangea and the dispersal of its fragments constituted merely the latest episode of ongoing dynamic processes.

When J. Tuzo Wilson conducted his seminar at The Ohio State University during the spring quarter in 1968, many of the older faculty members in the geology department were by no means ready to accept The New Global Tectonics. When they raised their hands to ask questions, Wilson ignored them. His lecture technique consisted of bringing in a stack of overhead transparencies and placing them one after another on the overhead projector, saying a few words, and then putting on the next transparency. It soon became obvious that each transparency was yet another riven nail driven into the coffin of the Geosynclinal Theory and replacing it with The New Global Tectonics. One day, in his haste, he knocked over the stack of transparencies. While he was picking them up and getting them back into the proper order, the pent up questions and objections cascaded down on him in waves. He ignored them all. When he had his transparencies back in order, he looked up at us, said "You must be converted!" and plopped on the next transparency. By the end of his seminar, I think everyone was. I didn't need to be, as I had no personal stake in the Geosyncline Theory and everything was new to me.

Wilson also revealed some of the behind-the-scenes activities during this revolution in the Earth sciences. He was a Canadian geophysicist, and his fellow Canadian, L. W. Morley, had been the first to recognize that symmetrical reversals of Earth's magnetic field recorded in rocks on opposite flanks of mid-ocean ridges were proof of sea-floor spreading, and therefore of both longitudinal and latitudinal continental drift. His paper pointing this out early in 1963 was rejected, first by the English journal, *Nature*, and then by the *Journal of Geophysical Research*. Late in 1963, *Nature* published the same idea in a paper authored by an English graduate student, Fred Vine, and his English research supervisor, Drummond Matthews. The idea was dubbed the Vine-Matthews Hypothesis, and it became a cornerstone of The New Global Tectonics. When Wilson related these goings-on to us, we all wondered whether Morley's paper had been reviewed by Vine or Matthews, who then recommended that it be rejected, knowing all the time that it explained their own data on paired magnetic reversals in the Pacific Ocean. Wilson wouldn't say, but he certainly cast a cloud over the reputations of Vine and Matthews that persists to this day (see "The Vine-Matthews hypothesis and how L. W. Morley was screwed by the Establishment" on pages l83-l85 in *The Way The Earth Works*, by Peter J. Wyllie, John Wiley & Sons, l976).

When Wilson came to the part of his seminar where he discussed thermal convection in Earth's mantle, I wondered if thermal convection were even possible in a crystalline material. It had been analyzed theoretically, first in l9l6 by J. W. Strutt, Third Baron Rayleigh, and also observed experimentally, only in fluids heated from below or internally. The criterion for initiating thermal convection is that the thermal buoyancy stress, produced when the lower portion of a fluid is hotter than the upper portion, must overcome the viscous resistance of the fluid to flow in a way that transports the warmer fluid to the surface and replaces it with colder fluid from the surface. The rising and descending plumes or curtains of fluid create polygonal convection cells having flat tops and bottoms and vertical sides. The ratio of the vertical buoyancy force to the viscous resisting force is a dimensionless Rayleigh number, which reaches a critical value when thermal convection becomes more efficient than thermal conduction in transporting heat to the surface of the fluid. In 1968, a core hole had been drilled through the Antarctic Ice Sheet at Byrd Station (80 degrees south, l20 degrees west). The temperature, depth, and density of ice down the core hole had been published, and both the effective viscosity and the thermal diffusivity of ice had been determined from laboratory experiments. From these measurements, the Rayleigh number could be calculated. I made the calculation and was surprised to see that it somewhat exceeded the critical Rayleigh number. Thermal convection should take place in the Antarctic Ice Sheet below the thermal density inversion. Since no such thing had been reported, I thought I had a solid argument against thermal convection in Earth's mantle, which was also crystalline, and therefore a powerful argument against The New Global Tectonics. I rushed up the stairs from my first-floor cubicle in Mendenhall Laboratory to Wilson's third-floor office. I even made it to the first landing before I said to

myself, “Not so fast, Hughes. Nobody knows for sure what goes on below the thermal density inversion in the Antarctic Ice Sheet. Maybe thermal convection does take place down there.” I turned and walked, not ran, back to my cubicle and wrote a manuscript with this proposal, showed it to Wilson and to several other glaciologists, who recommended I submit it to *Science*. I did, it was reviewed favorably by Mark Meier, a renowned glaciologist in the U.S. Geological Survey, and in 1970 I had my first published paper in glaciology, thanks to J. Tuzo Wilson. See the Topsy-Turvy addendum at the end of *Ice Man*.

Colin Bull and John Splettstoesser thought the possibility of thermal convection in the Antarctic Ice Sheet was important enough to present at the Alaska Science Conference, which was being held in June of 1968. So John and I attended. Alaska Airlines seemed to me like a fly-by-your-pants operation but it got us from Seattle to Fairbanks. We were met at the airport in Fairbanks by Judy Holland, who was acting as some kind of hostess at the Technological Institute of the University of Alaska, which conducted the Conference. She was wearing a yellow dress that was so filthy I imagined a dirt particle was trapped in every pore of the cloth. I delivered my talk about the possibility of thermal convection in the Antarctic Ice Sheet to a largely unresponsive audience. That concept wasn’t on their radar screen so they may have been blind-sided by it. But afterward a few approached me to express sincere interest. I don’t know if they were Big Shots or not because at that stage of my career I didn’t know who the Big Shots were. What I still remember is the return trip I took, by bus from Fairbanks to Whitehorse in Canada’s Yukon Territory, and taking the White Pass and Yukon passenger train from Whitehorse to Skagway, where I boarded an Alaskan Ferry boat which took me through Alaska’s Inside Passage to Seattle. In 1966 I was in Whitehorse and learned about that train ride, and how spectacular it was.

Whitehorse was the terminal of the White Pass and Yukon Railway built after the Klondike Gold Rush in 1898. It operated a passenger train from Whitehorse to Skagway, where I could take an Alaskan Ferry System boat to Seattle. When I attended the Alaska Science Conference in June, I had my opportunity to take that trip. So I did. A bus took me from Fairbanks to Whitehorse on the Alcan Highway, a very scenic drive, but nothing like the train over the Continental Divide to Skagway on the railroad. There weren’t many passengers, but a lot of freight was moved. The quickest way to the 1898 gold fields from the West Coast was by ship to Skagway and then by packhorse over White Pass, the low point on the North American Continental Divide, to Whitehorse, where stern-wheel ferry boats would take prospectors down the Yukon River to Dawson and the Klondike River gold fields. Two of those stern-wheelers were still on display at Whitehorse. The first point of interest on the train was near Miles Canyon, where Jack London ferried his boat during the gold rush. We saw a ferry across Lake Bennett and a narrow-gauge steam locomotive still operating at Carcross. Boat navigation ended at rapids entering Lake Lindeman, where the climb up to White Pass began. That’s where the scenery really got spectacular. We passed Dead Horse Gulch, where 3000 pack animals died in 1889 during the Klondike Gold Rush. Our train crossed a trestle bridge 315 feet above the gulch. Then we entered the Snow and Rock Fall Tunnel through Tunnel Mountain, the most majestic peak I saw, soaring in isolated majesty. Crossing White Pass at 2400 feet above sea level, we could see Skagway and Lynn Canal in the distance. We passed Bridal Veil Falls as we approached Skagway. It was a very picturesque town of 750 people, retaining all the charm of the gold rush era.

The Alaska Ferry was waiting for us at the end of Lynn Canal, a water-filled tectonic fault that continued as a gorge up to White Pass. Lynn Canal is part of a tectonic fault system that detached a strip of the North American Cordillera and produced a chain of islands from Skagway to Seattle, the largest being Vancouver Island. The Inside Passage is a deep waterway between the islands and the mainland that is sheltered from Pacific storms by the islands. Important Alaskan settlements along the way are Juneau, the capital of Alaska, Sitka, the “capital” of Russian America, Petersburg, a fishing village in a spectacular natural setting, and Ketchikan, on the southernmost Alaskan Island, not to mention Prince Rupert and Vancouver in British Columbia. Juneau was located at the head of a narrow steep-sided fjord

that must have posed a challenge to in-flying airplanes. Sitka still had an impressive Russian Orthodox Church that dated from the time when Alaska was part of Czarist Russia. I saw my first Indian totem poles at Sitka. The mountains of the Coast Range towered above Petersburg and were all glaciated. Our ferry arrived just as the morning sun was peeking over the icefields, casting a crimson glow over glaciers that seemed to be swooping down on the quaint little fishing village. It was a vision I'll never forget and tried to capture on film, but it lasted a very short time. I switched to the British Columbia Ferry at Prince Rupert, where I had time to see the many totem poles, and took the ferry to Kelsey Bay on Vancouver Island. From there I took a bus to Victoria, a picturesque town with English charm, lots of totem poles, and a nice view of the Olympic Mountains across the Strait of Juan de Fuca. I took another ferry to Port Angeles on Olympic Peninsula, and rode a bus along the highway between Puget Sound and the Olympic Mountains to Corvallis, Oregon, where brother Leo lived with his family. I arrived just in time for the annual daffodil festival.

The global hemisphere map at the beginning of this chapter (Chapter 4) does not show my return trip from Fairbanks via the White Pass and Yukon Railroad and the Inside Passage ferryboats. By mistake, I put that trip on the global map at the beginning of Chapter 6.

Most of my early papers dealt with thermal convection as the driving force for plate tectonics. I realized that the Antarctic Ice Sheet was a mantle of ice heated from below that was simpler than Earth's mantle because it consisted of only one mineral, and was accessible to direct study because it was much smaller, so it was an ideal laboratory for studying thermal convection in Earth's mantle. Or so I thought. In 1971, I argued that if thermal convection could be detected in polar ice sheets, it would provide a model for understanding convection in Earth's mantle. In 1972 I derived a critical Rayleigh number for thermal convection in crystalline solids that would apply to both ice sheets and Earth's mantle. In 1972, I also investigated how thermal convection in ice sheets would be affected by different empirical formulations for steady-state flow (called "creep") of ice. In 1973, I argued that an unstable tetrahedral pattern of mantle convection provided the best explanation for continental drift since the breakup of Pangea. In 1973, I also argued that Earth's rotation could rotate the major crustal plates that lie within the present-day tetrahedral convection cells. In 1975, I argued that the unstable tetrahedral pattern of mantle convection could open the Pacific Ocean during the Mesozoic Era, when the other oceans had opened. This was a natural extension of my theoretical interest in thermal expansion which *The Physical Review* published in 1964, based on my master's laboratory experiments measuring thermal expansion in NiAl alloys.

No sustained effort has arisen in the glaciological community to systematically investigate the possibility of thermal convection in present-day ice sheets. The American geophysicist, Charles Bentley, suggested in 1971 that thermal convection might account for seismic anisotropy that he detected in the western hemisphere part of the Antarctic Ice Sheet, commonly called the West Antarctic Ice Sheet. Bentley is among the giants in glaciology. He began his Antarctic career during the 1957-1958 International Geophysical Year. He was on the early tractor-train traverses over the Antarctic Ice Sheet and led many of the later ones. He headed the Geophysical and Polar Research Center at the University of Wisconsin, and he has been a major participant in every important glaciological study in Antarctica for a full half-century. I argued in 1975 that spikes in the oxygen isotope stratigraphy near the base of core holes through present-day ice sheets at Camp Century in Greenland and at Byrd Station in Antarctica may have been caused by thermal convection below the density inversion. The conventional view was that these spikes recorded climate changes above the ice surface over the time when the ice was falling snow. I was also invited in 1975 by the International Glaciological Society to give a talk on the possibility of thermal convection in polar ice sheets at its International Symposium on the Thermal Regime in Glaciers and Ice Sheets. It was held at Burnaby in British Columbia.

That was where I first met Barclay Kamb. He was the first American to get the Seligman Crystal, the highest award of the Society. Barclay was of slight build and average height, and had bushy gray hair. He was based at the California Institute of Technology. After almost every talk, he popped up to ask a question or make a comment. After my talk his comment was, as I recall, "That's all speculation." I told him, "Speculation is my stock in trade." It still is. Back then, the Society published proceedings of its symposia in the *Journal of Glaciology*, and discussion following talks was also published. My exchange with Barclay wasn't published. I guess it's because neither his question nor my answer shed any light on the substance of my talk. In 1985, the Society published my analysis of transient thermal convection in ice sheets below the thermal density inversion. In my 1998 book, *Ice Sheets* (Oxford University Press), I showed how transient and steady-state thermal convection in the Antarctic Ice Sheet could account for the observed obliteration of stratigraphic layering below the thermal density inversion and the severe distortion of this layering above the inversion, both of which were mapped by radar profiling. I also suggested that thermal convection below the density inversion may explain the mismatch of oxygen-isotope stratigraphy in the lower parts of the twin core holes to bedrock from the summit of the Greenland Ice Sheet.

Except for Bentley, no other glaciologist has seriously looked for convection in ice sheets. Hans Weertman told me, "I feel in my bones that it can't happen." I asked him to let me know when he heard from his brain. Louis Lliboutry, the most renowned French glaciologist, told me at the 1975 symposium, "I considered convection in ice sheets and rejected it." Just so I knew. He didn't bother to publish an account of why he rejected it. This neglect is short sighted. If thermal convection were found to exist in the Greenland and Antarctic ice sheets, it would be a great boon to glaciology because it would immediately attract the intense interest of geophysicists who study and model convection in Earth's mantle as the driving mechanism for plate tectonics on Earth's surface. It would place glaciology at the center of one of the greatest scientific revolutions of the twentieth or any previous century.

Geophysicists always had more interest in the possibility of thermal convection in polar ice sheets than did glaciologists. Not only was I always able to publish various aspects of the idea in the geophysical and tectonics journals, but in 1980 I was invited to attend the International Conference on Mathematical Problems of the Thermal and Dynamic State of the Earth. All the big shots in plate tectonics were there. It was held at Lake Arrowhead in California in August, so we had the place pretty much to ourselves. Skiing enthusiasts populate the place in the winter. All the big shots active in showing how thermal convection in Earth's mantle could drive the migrations of crustal plates were there, so the conference was very much at the center of legitimizing the New Global Tectonics. I believed in mantle-wide thermal convection, which was the minority view at the time. Allied with me was W. Richard Peltier.

Dick Peltier came to his convictions by working with a mathematician, W.E. Farrell, and geologist Jim Clark. They had developed a model of crustal and mantle deformation beneath and beyond Quaternary ice sheets to compare the redistribution of mass in the mantle with records of changing sea level at various places around the world as most Northern Hemisphere ice sheets collapsed during the last deglaciation. Jim Clark had collaborated with Craig Lingle, my first graduate student at the University of Maine, to model sea-level changes around the West Antarctic Ice Sheet as it underwent partial gravitational collapse during the last worldwide deglaciation. I have never met Farrell, but Dick Peltier and I were to cross paths again and again throughout my glaciological career. Dick is short and stocky, with short black hair, a round face, and supreme self-confidence. He is the only one to have developed a way to map the vertical extent of former ice sheets that didn't need glaciology or glaciologists. His approach was based on his model of mantle rheology and records of changing sea level. Taken together, they could be used as an independent way to calculate ice thicknesses within the shrinking areas known from glacial geology to have been covered by ice sheets during the last deglaciation.

The Greenland Ice Sheet was discovered by the Innuit some time after 11,000 years ago, when gravitational collapse of the Innuitian Ice Sheet began and led to human migrations across the islands of Arctic Canada. It would have been seen by Celtic seafarers who may have visited North America before the Christian era (see, *America B. C.*, by Barry Fell, Pocket Books, New York, 1976). Irish monks from Iceland discovered Greenland before 870 A. D., and Vikings settled Greenland after Eric the Red's visit in 982. The great Danish explorer, Fridtjof Nansen, crossed the southern part of the Greenland Ice Sheet in 1887. The northern part of the ice sheet was crossed by the American explorers, Robert Peary and Matthew Henson, in expeditions between 1891 and 1895. Henson was black. He learned the Innuit language and was indispensable to Perry, but Perry never let Henson accompany him in his speaking tours. Four scientific expeditions to the ice sheet were made from 1906 to 1930 by Danish and German scientists, notably Alfred Wegener.

During World War II, navigators on American aircraft flying over the Greenland Ice Sheet noticed their radar gave two reflections, one from the surface and one from the bed of the ice sheet. This was the first indication that the ice thickness and the bed topography could be mapped by airborne radio-echo sounding traverses. One plane crashed on the ice sheet during poor visibility when the navigator thought the bed reflection was at the surface. The French Polar Expeditions to Greenland from 1948 to 1953 discovered that most ice from the Greenland Ice Sheet was discharged by fast currents of ice, which Henri Bader called ice streams, and the velocities of the major ice streams on the west coast were measured by aerial photogrammetry. The first deep core hole into the Greenland Ice Sheet was drilled at Site 2 in 1957-1958 during the International Geophysical Year by engineers at the U. S. Army Snow, Ice, and Permafrost Research Establishment (SIPRE) in Illinois. A core hole l390 meters deep to bedrock was drilled through the Greenland Ice Sheet at Camp Century in 1961, after SIPRE became the Cold Regions Research and Engineering Laboratory (CRREL) and moved to Hanover, New Hampshire. The ice core was subsequently studied as a record of ice dynamics and past climates by glaciologists from CRREL, Denmark, and elsewhere. This revolutionized glaciology and led to the Greenland Ice Sheet Project during the 1980s and 1990s, when core holes were drilled at many sites, culminating in the twin core holes to bedrock, over 3000 meters deep and 27 kilometers apart, at the summit of the Greenland Ice Sheet. Chief scientist at the GISP-2 site was Paul Mayewski. I was on his doctoral committee when he was a graduate student at the OSU Institute of Polar Studies.

The Antarctic Ice Sheet was first sighted in 1819-1821, by Nathaniel Palmer during an American sealing expedition, during the Russian circumpolar expedition led by Fabian von Bellingshausen, and by Edward Bransfield of the British Royal Navy. The American Wilkes expedition from 1838 to 1840 sighted the Antarctic coast repeatedly between 160 and 120 degrees east longitude, thereby establishing that the continent was covered by a vast ice sheet. The first treks onto the ice sheet were undertaken during British expeditions led by an Englishman, Robert Scott, in 1901-1904, an Irishman, Ernest Shackleton, in 1907-1909, and an Australian, Douglas Mawson, in 1908. These and later expeditions discovered that the Antarctic Ice Sheet, like the Greenland Ice Sheet, was drained by ice streams. Treks over the ice sheet reached the South Pole in 1911-1912, first by the Norwegian expedition led by Roald Amundsen, and then by the British expedition led by Robert Scott. Amundsen didn't lose a man, but Scott didn't lose a dog (see Chapter 11). In 1914 Shackleton attempted to cross the Antarctic Ice Sheet from the Weddell Sea to the Ross Sea by way of the South Pole. His ship was crushed in the Weddell Sea pack ice, an event that propelled Shackleton into one of the great survival sagas of all time. He also never lost a man. Another British expedition led by Vivian Fuchs succeeded in making the trek Shackleton had planned, but over 40 years later, during the 1957-1958 International Geophysical Year. American expeditions led by Richard Byrd between 1928 and 1935 made observations over the Antarctic Ice Sheet all the way to the South Pole between 117 and 180 degrees west longitude. The U. S. Navy, during Operation Highjump and Operation Windmill, mapped much of the Antarctic coast during the late 1940s.

Many countries had made territorial claims in Antarctica and had established scientific stations on the continent, especially during and after the International Geophysical Year. The Antarctic Treaty was drafted to suspend national claims in Antarctica and reserve the continent for international scientific research. It went into effect in 1961. This was a great triumph of Cold War diplomacy. The United States and the Soviet Union had the most Antarctic stations, recognized no national claims, and made no claims of their own. When they agreed to the terms of the treaty, the other countries had little choice but to also comply. The Antarctic Treaty opened up Antarctica to scientific research by all nations with full international cooperation. This was a particular boon to glaciology, since 98 percent of the continent is covered by the Antarctic Ice Sheet. It introduced the era of tractor-train traverses over the ice sheet, with frequent measurements of temperature, elevation, winds, precipitation, and ice thickness along the traverse routes. It led to deep drilling programs to recover long-term climate records from ice cores at Byrd Station in West Antarctica, at Vostok Station and Dome Circe in East Antarctica, and through the Ross Ice Shelf, primarily by American, Russian, and French glaciologists. It also led to major international glaciological projects, notably the radio-echo sounding program that mapped ice elevations, internal ice stratigraphy, and bed topography along gridded flight lines in East and West Antarctica during the 1970s, the Ross Ice Shelf Project that studied ice-shelf dynamics during the 1980s, and the Siple Coast Project that studied ice-stream dynamics during the 1990s. These studies led to the Filchner-Ronne Ice Shelf Programme (FRISP) and the West Antarctic Ice Sheet Initiative (WAIS) that began in the late 1990s. WAIS has continued well into the twenty-first century.

During the 1980s and 1990s, the U. S. National Aeronautics and Space Administration (NASA) became heavily involved in glaciological research on the Greenland and Antarctic ice sheets, as well as on polar sea ice. The satellite technology that NASA brought to glaciology made precision measurements over vast areas possible for the first time. These measurements include tracking cyclonic storm systems and iceberg outbursts, and detecting small changes in ice elevations, ice surface velocities, crevasse propagation, and migration rates of ice-shelf grounding lines. They hold the promise of measuring ice accumulation rates and ice surface temperatures, and mapping the subglacial topography. The NASA program and similar programs by other nations will transform glaciology in the decades ahead. NASA glaciology was founded by H. Jay Zwally. He funded my first Antarctic research proposal when he was program manager for glaciology at the National Science Foundation.

I entered glaciology in 1968, a very auspicious year. John Mercer, a glacial geologist at the Institute of Polar Studies, published a paper arguing that the West Antarctic Ice Sheet was inherently unstable because it was mostly grounded far below sea level, and he presented evidence that it had been both much larger and much smaller in the past, possibly even collapsing completely during the last interglacial period 125,000 years ago. Mercer coined the term “marine ice sheet” to describe the West Antarctic Ice Sheet. That same year, American glacial geologists George Denton and Richard Armstrong presented evidence that a former marine ice sheet had occupied the Ross Sea Embayment of Antarctica, and had invaded the ice-free Dry Valleys in the Transantarctic Mountains west of McMurdo Station, the center of most American research activity. Also in 1968, evidence for a marine ice sheet in the Barents Sea north of Scandinavia was published by glacial geologists Valter Schytt and Gunnar Hoppe from Sweden, Weston Blake from Canada, and Mikhail Grosswald from Russia. Two years later, in 1970, Blake published evidence that a marine ice sheet had also covered the Queen Elizabeth Islands of Arctic Canada. He called it the Innuitian Ice Sheet. Marine ice sheets that could rise up from the sea and advance onto land became a major focus of my research as a glaciologist, my Marine Ice Transgression Hypothesis (MITH).

When Colin Bull wrote Hans Weertman asking if he could recommend a field assistant for an Ohio State expedition to Antarctica, the expedition he mentioned was to the ice cap on Anvers Island, where the Americans built Palmer Station on the Antarctic Peninsula. Art Rundle was to lead it. As things

turned out, I would be going to Meserve Glacier in Wright Valley, one of the Dry Valleys. Gerry Holdsworth, a New Zealand "Kiwi", was doing his OSU doctoral research on Meserve Glacier, the first study of a "cold" glacier that was frozen to its bed. Meserve Glacier came down the side of Wright Valley and ended as an ice wall about 20 meters high, from which ice slabs calved. Gerry had dug a long tunnel into the side of the ice wall the year before, and confirmed that the bed was frozen. He also measured creep rates in ice above the frozen bed. This time, he wanted to drill a series of holes to the bed along the centerline of the glacier, and measure both the temperature and the velocity profile down the holes, which should become bent by the moving ice. Gerry had ordered a drilling rig, called the Acker Ace, from a company in Pennsylvania that manufactured drilling equipment used by geophysical prospectors to drill core holes through bedrock. He took me to Pennsylvania to inspect the rig before it was shipped to Antarctica. The drill rig consisted of a gasoline engine that powered a winch and a drilling column of ten-foot lengths of steel pipe that could be screwed together and had a two-inch inside diameter, with a hollow drill bit at the end. The engine also powered a water pump that forced water into the core hole so the rock chips could be flushed up to the surface, while the rock core was brought up inside the pipe in sections of various lengths. Since we would be drilling through ice, not rock, and the ice chips might clog the pipe and the plumbing, Gerry thought the pumping fluid should be trichloroethylene, which would dissolve the ice chips. Any undissolved ice chips could be screened out of the fluid by passing it through screens having two mesh sizes that were placed over tanks (55 gallon drums cut in half lengthwise) through which the fluid was cycled, before pumping it back down the core hole. We thought it should work. Such was our state of ignorance at the time.

The Logan Caper

Gerry had also obtained some money from the National Geographic Society and the Arctic Institute of North America to survey the elevation of the summit of Mount Logan, Canada's highest peak, which was in the Saint Elias Range of the Yukon Territory. It was found to be l9,850 feet high during the survey of the border between Alaska and Canada, making mount Logan the second highest mountain in North America. Gerry had argued that the measurement could be off by 500 feet because of refraction errors over long distances, so Mount Logan might be 50 feet higher than the 20,300 foot-high summit of Mount McKinley, officially the highest mountain. He proposed a new survey in which refraction errors would be eliminated by having one surveying party at the summit making a simultaneous sighting with another surveying party at a known survey marker near the base. Since I had climbed Kilimanjaro, Gerry knew I would not be affected by the high elevation of Mount Logan, so he and I would constitute the summit survey party and two other graduate students would be the base survey party. One of them was John Lindsay, an Australian "Aussie" (I've forgotten the other one's name).

We flew into Whitehorse in the Yukon Territory by commercial airplane in May of 1968. Two stern-wheeler paddleboats were drydocked as we entered town. They were assembled here to take prospectors down the Yukon River to the Klondike gold fields near Dawson. A railroad, the White Pass and Yukon Railroad, also was built to bring prospectors from Skagway over the continental divide to Whitehorse. After I attended the Alaska Science Conference in Fairbanks in June, I took a bus to Whitehorse just so I could take this railroad to Skagway and then board an Alaskan ferry boat through the Inside Passage to Seattle. We drove to Lake Kluane from Whitehorse and boarded the airplane owned by AINA, a Helio Courier piloted by Phil Upton, that took us to King Trench on the opposite side of the mountain from Kaskawulsh Glacier, where we landed on the snow above the equilibrium line that separated the accumulation and ablation zones of the glacier. It was one of several glaciers in the Saint Elias Range that began on the slopes of Mount Logan, an enormous massif that had several summits. Gerry also had me in mind for his pack animal. He piled the tent and surveying equipment on my back and we began hiking to King Col, a saddle in the snowfield between Mount Logan and a neighboring peak where Kaskawulsh Glacier began. Gerry began calling me "Horse."

Two other climbing parties made the same ascent we made. A meteorological team of three led by Charlie Keeler made the climb about 100 yards to our right. The Underwood team was already at The Hut, where Keeler was headed. From King Col, we made a left hand turn and began trudging up the side of Mount Logan. A lot of weather is generated around Mount Logan, and meteorologists made the climb every May to set up a summer weather station at The Hut on the plateau between the various summits. The snow slope had an angle of about 45 degrees, so the climb was long but not difficult. When we got to the plateau, we had a chance to visit with the three meteorologists. They told us that the year before one of them got loose bowels during a snowstorm when the wind-chill temperature dropped to 60 degrees below zero. He held it in as long as he could, but he finally had to go out of the tent to defecate. Their tent was pitched on a rock outcrop above the snow, so it wouldn't get buried in snowdrifts. When he climbed out of the tent he had to jump off of the ledge onto the snow. He was wearing a form-fitting nylon body suit, and when his feet hit the ground after the jump, his sphincter gave way and all the fluid shit came gushing out. It filled up the body suit right up to his chin, and froze. He went back into the tent and got into his sleeping bag, but then the shit began to thaw and stink up the tent. So he had to go back outside, strip off his body suit, and peel the shit off his skin at sixty below zero wind-chill.

Mount Logan is enormous. It has several summits. The Lindsay surveying team at the base had a direct line of sight to the north "peak" of Mount Logan, so that's the summit Gerry picked for our surveying camp, even though it was lower (5567 m) than the main summit (5957 m). From there he was also able to "shoot" the main summit, about 10 km away. Gerry also got an elevation sighting for The Hut used by the High Altitude Physiology Project, which was needed to get an altitude determined by atmospheric pressure (about 5300 m). Gerry and I climbed to the north summit, which was visible from the base surveying station, and Gerry set up his tripod and theodolite. The wind was blowing in strong gusts that shook the tripod, so Gerry couldn't get a good sighting to the base camp. The two at the base camp were to set off smoke bombs when they spotted us on the summit, so we could locate them, but we could see no smoke. Gerry Holdsworth has an easy-going disposition. In appearance, he could qualify as a member of the Aryan Master Race. Yet, under these conditions, he lost it. He began swearing like a sailor who was denied shore leave (and thus access to whorehouses). I never heard such a string of profanity. I piled rocks around the legs of the tripod, and that helped to reduce the vibrations. We did the best we could. Gerry took theodolite readings to the other summits on Mount Logan, including the highest summit, and he took readings to various other points below that could be triangulated from the base camp as well. When we returned, we learned the two at the base camp had spotted us on the summit and had set off the smoke bombs, but we never saw the smoke. They got some good theodolite sightings on us and Gerry was able to calculate that Mount Logan was a bit lower than l9,850 feet. Needless to say, his new elevation was not entered on the Canadian maps until he made a second more rigorous determination in 1974 with Ferdl Taxboeck and Henry Brecher. Henry, like Gerry and me, was at the OSU Institute of Polar Studies. Henry became my surveyor as well, on my own glaciological field projects.

My First Glaciological Meeting

In September of 1968, Gerry and I attended the International Symposium on Antarctic Glaciological Exploration (ISAGE), held at CRREL in Hanover, New Hampshire. It was my first glaciological conference (the earlier Alaska Science Conference was not just glaciological). Gerry presented results from creep experiments in his tunnels and boreholes on Meserve Glacier. Charlie Bentley presented results from his studies of seismic anisotropy in the West Antarctic Ice Sheet. Others presented results from radio-echo sounding, mass balance studies, meteorological investigations, and ice dynamics, but results from the core hole 2l64 meters deep to bedrock at Byrd Station in West Antactica

were the centerpiece of the symposium. For me, what made the symposium memorable was the clash of egos among whom I had come to recognize as the Big Four of glaciology: John Nye from Britain, the Father of Modern Glaciology for English-speakers, Louis Lliboutry from France, author of the monumental two-volume *Traite de Glaciologie*, Petr Shumsky from Russia, author of Principles of Structural Geology, recently translated into English, and Hans Weertman, my American glaciological mentor.

Shumsky's presentation consisted of filling all blackboards with mathematical equations while speaking in Russian. His translator kept up the best he could. At the end, the chairman of the session asked if anyone had questions. Someone got up and asked if Shumsky had made a statistical analysis of his results. This was translated into Russian. Shumsky made a reply in Russian, and the translator said, "I don't deal in statistics. I deal in facts." End of discussion.

One of the exciting features of glaciers is the ability some of them have to increase their velocity up to a thousand fold for a period of time lasting from weeks to a year or so, and then melt back slowly while ice thickened enough to trigger another rapid advance. These episodes of rapid advance are called glacial surges. A Symposium on Glacier Surges was held at St. Hilaire in Quebec, immediately following the ISAGE meeting in Hanover. Gordon de Q. Robin, Director of the Scott Polar Research Institute in Cambridge, England, gave a paper entitled, Initiation of Glacier Surges. After Robin's talk, Professor Lliboutry got up (everyone called him Professor Lliboutry), and said, "I suppose I must congratulate Dr. Robin for being able to write his paper without any reference to my previous work." He then referred to a paper that he had developed from the *Traite de Glaciologie* and had submitted in 1966 to the *Journal of Glaciology*. The journal was produced in the same building where Robin worked, which was also the headquarters of the International Glaciological Society. Professor Lliboutry continued, "This paper was rejected by the referees, and one even said that I understood nothing at all about ice dynamics. I should be happy if the same anonymous referee would stand and criticize Robin's paper now, since he is putting forward a theory very similar to my old one." The only one standing was Robin. Professor Lliboutry's implication was clear. Anyone doubting this account can consult page 926 in Volume 6, Number 4, of the *Canadian Journal of Earth Sciences* (August, 1969).

Glaciology began as a descriptive discipline within geology, following formulation of the Glacial Theory by Louis Agassiz in the nineteenth century. The International Glaciological Society grew out of the British Glaciological Society, which was founded in 1936, with Gerald Seligman as its first president. He became the first recipient of the Seligman Crystal, which was the highest award by the Society and is now regarded as the highest award in glaciology. Glaciology was transformed into a quantitative branch of physics during World War II. While conducting gunnery practice on icebergs, officers in the Royal Navy noticed that ice was able to absorb the shock of exploding shells with very little damage. This led to the idea by Geoffrey Pike to propose to Winston Churchill, by way of Lord Mountbatten, that vessels constructed from ice could transport ordnance from America to the Russian Arctic ports of Murmansk and Archangel, and be virtually impervious to attacks from German wolf-pack submarines that were sinking frightful numbers of supply vessels plying the North Atlantic shipping lanes. Disregarding Pike's fishy name, Churchill bought the idea and The Canadian Habbakuk Project was born. Despite the Biblical illiteracy, the name was inspired by the Old Testament prophet, Habakkuk, who foretold the ultimate triumph of the Israelites (British) over the Babylonians (Germans). Numerous standard experiments were conducted to determine the physical and mechanical properties of ice, and a prototype vessel was even constructed during the winter of 1943 at Patricia Lake in Jasper, Canada. The practicality of the operation was called into question as work proceeded (see: *The Canadian Habbakuk Project*, by Lorne Gold, published by the International Glaciological Society, 1993). By then, sonar had been developed to the point that German submarines could be tracked from surface ships and destroyed using depth charges. The Habbakuk Project was abandoned, but it had the happy result of educating many Canadian,

American, and British scientists about the physical and mechanical properties of ice.

One young physicist was studying plastic deformation in slabs compressed between rough, parallel plates at the Cavendish Laboratories in 1947 for the British Ministry of Supply. He later realized that the resulting slipline field for the maximum shear stress in the slabs would be the slipline field in ice sheets to a good approximation, if the top half of the slab were removed and it were allowed to flow under its own weight, instead of flow being caused by compression between parallel plates. The physicist was John Nye (see footnote 3 on page 538 of *Theory of Flow and Fracture of Solids, Volume One, Second Edition*, by A. Nadai, McGraw-Hill Book Company, 1950). He published this result and new studies springing from it in a series of papers published in the 1950s and 1960s, notably in the *Proceedings of the Royal Society of London* and in the *Journal of Glaciology*. In my opinion, these papers earned him the title, Father of Modern Glaciology, at least in the English-speaking world. Nye's dark hair was mostly gone by the time I met him, and his slender body and erect bearing made him appear taller than he was. His exchanges with Professor Lliboutry, and also with Hans Weertman, at scientific meetings had become legendary. Yet he was always courteous to a fault.

Prelude to Antarctica

Gerry Holdsworth had picked his team to drill the core holes through Meserve Glacier in Wright Valley during the 1968-1969 Antarctic summer. His team included Maurice McSaveney, a fellow Kiwi tallish and slender like Gerry; John Gunner, a small blond Scotsman who spoke with an English accent; Fritz Belzer, a husky American on the CRREL drilling team at Camp Century in Greenland; and me, a South Dakota cowboy. In addition, Gerry had arranged for John Nye, Colin Bull, and Stan Paterson to spend some time with us on Meserve Glacier. Stan was a Scottish-born Canadian with a "burr" on his tongue. He had written *The Physics of Glaciers*, the only English textbook on glaciers. Gerry gave McSaveney the option of making the results of the drilling program the subject of a doctoral dissertation. The two were alike but also quite different. Both were mild-mannered New Zealanders, both were about six feet tall, and both had slight frames. However, Holdsworth had a wiry muscular body, whereas McSaveney was just plain skinny. He wore short shorts, so his legs were exposed from his crotch to his ankles. They were thin. I wondered if he could handle the climbing and carrying we would be doing on the glacier. I decided to call him Mac, which was more masculine than Maurice, or even Mauri. I thought about calling him Maori, the name of the aboriginal Polynesians of New Zealand, but I would have to keep explaining that to people if I did.

As it turned out, Mac did lack the strength and stamina for some of our operations, but otherwise he did his job. Stan Paterson failed his physical examination, so he couldn't go. To everyone's surprise, a spot was found on Gerry's chest x-ray during his physical examination and that prevented his going to Antarctica. Gerry wanted to defer drilling until the next Antarctic summer, in the hope the chest x-rays were misleading and he could join the expedition. But Colin Bull, his doctoral advisor, wanted no postponements. This was the season Colin was free to participate, and he had another graduate student, Paul Mayewski, also in the field doing doctoral research in Wright Valley. Colin, although good-humored, had the appearance of a British Bulldog. When he made a decision, all discussion ceased.

All of a sudden I was put in charge of the expedition, since I was the only one with that magical title, Ph.D. Never mind that I had no background in glaciology, I didn't know a thing about drilling holes in ice or in anything else, and I had never been to Antarctica. Little did I expect that I was about to get a crash course in on-the-job training. The drilling method that Gerry designed didn't work at all, so I had to come up with an alternative method in the field. The CRREL glaciologists were drilling a core hole to

bedrock at Byrd Station in the middle of the West Antarctic Ice Sheet, and they had an auger for coring firn (packed snow) that consisted of a pipe ten feet long with a narrow inclined plane wrapped around the outside and a bit at one end. I had it flown to our drilling site, but I had to design an adapter so the auger would fit our drill rig and a bit that would core ice, and then have the machine shop at McMurdo make these parts. Even then, the ice core kept jamming in the core barrel so we couldn't use that method. Then Fritz Belzer spotted a bunch of flight augers in four-foot sections at the warehouse in McMurdo. Each section consisted of a wide inclined plane wrapped around a pipe about two inches in diameter. It didn't take a core, but it drilled a hole about six inches across. I had to have the machine shop make an adapter for our drill rig again, but the flight augers worked fine. However, we had to dissolve the ice chips that stayed in the holes and then bail the solution out of the holes using a string of tin cans. These examples of Murphy's Law (if something can go wrong it will go wrong) are getting ahead of the story.

We would be living in a Jamesway at the side of Meserve Glacier in Wright Valley. Jamesways are Quonset hut-like structures consisting of interlocking wooden arches, over which blankets of insulation are draped. Bob Behling, a graduate student in geology at The Ohio State University, would be using our Jamesway now and then. We could expect an occasional visit from Scott Smithson, a geophysicist at the University of Wyoming. Two glacial geologists who were working in Wright Valley would also be stopping at our Jamesway from time to time. They were Parker Calkin, from the State University of New York at Buffalo, and Paul Mayewski, a graduate student at The Ohio State University. Paul would go on to direct the Greenland Ice Sheet Project from the University of New Hampshire, after spending two years as a postdoctoral research scientist at the University of Maine working under George Denton. I was also destined to be a colleague of Denton. George Denton had discovered in the previous year, 1967-1968, that a marine ice sheet from the Ross Sea had invaded Wright Valley during glacial advances of the Quaternary Ice Age.

Our task was to drill three or four holes spaced about equally down the centerline of Meserve Glacier, log temperatures and inclinations down the holes, and determine changes in the fabric of ice crystals down the holes by making thin sections from the ice cores and measuring the individual crystal orientations in each section using a Rigsby stage. Scott Kane, a graduate student in geophysics at Ohio State, had designed the temperature probes we were to use. In return, he wanted me to fly to Plateau Station and log the temperatures in a borehole 100 meters deep that he had drilled into the ice sheet when he stopped there at the end of the tractor-train traverse over Queen Maud Land in East Antarctica the year before. It took a year for temperatures down the hole to equilibrate to the precision temperatures he needed, within a hundredth of a degree Celsius. He hoped to measure the geothermal heat flux. He gave me two probes, with one as a backup. Plateau Station was the highest and most remote American research station. Inclinations down holes we drilled would be used to measure the down-hole velocity profile of ice by measuring how much the hole tilted over time due to the decrease in horizontal ice velocity from the top to the bottom of Meserve Glacier. Gerry had borrowed an inclinometer that was built by engineers at CRREL. It consisted of a pendulum that pointed away from the bull's eye of a circular target as the tilt increased. A tiny camera inside the inclinometer took photographs of where the pendulum pointed on the target to measure the angle of tilt, and of the needle on a compass to measure the bearing of the tilt. The inclinometer was to be placed in a sealed tube to prevent the drilling fluid from leaking into the apparatus, and the tube was to be lowered down each core hole, with the camera taking pictures at different depths by remote control. We were also to re-survey the positions of stakes that Gerry had placed on the glacier surface to measure the surface strain rates. As comedian Jackie Gleason would say, "And away we go!"

Photos for Chapter 4: I Become A Glaciologist

Photos are numbered from left to right and from top to bottom.

1. A stern-wheel paddleboat in Whitehorse in May of 1968 that once took gold prospectors to Dawson on the Yukon River. Gerry Holdsworth and I landed in Whitehorse on our way to determine the summit

elevation of Mount Logan in the Yukon Territory of Canada.

2. Our first view of Mount Logan from the airplane. It is a gigantic massif which stands alone and has several summits. We chose to measure the elevation of the north summit using simultaneous sightings from the summit surveying party and a lower surveying party at a known elevation marker.

3. Kaskawulsh Glacier from the Helio Courier airplane flown by Phil Upton. He took us to King Col, between Mount Logan and King Peak in the Saint Elias Mountains.

4. Phil Upton lands us in King Col, where the Keeler scientists have pitched their tents.

5. The ascent up Mount Logan, Gerry and I in the foreground and the Keeler climbers in the background.

6. Alpine Glow viewed from the slopes of Mount Logan looking toward Mount Saint Elias.

7. I am the pack animal for Gerry Holdsworth. Mount Saint Elias is in the background, viewed from The Pass on Mount Logan. Gerry called me “Horse”.

8. I am standing where three separate scientific parties pitched tents, the Holdsworth tent (right), the Keeler tent (left), and the Underwood tent (center), at about 17,000 feet above sea level.

9. Gerry Holdsworth looks back at King Peak.

10. King Peak looks small when we reach the top of Mount Logan.

11. Atop the north peak of Mount Logan, I help Gerry Holdsworth set up the tripod for the theodolite Gerry will use in making simultaneous sightings with the surveyors below Mount Logan.

12. Job finished, Gerry Holdsworth takes one last look before we begin the descent of Mount Logan.

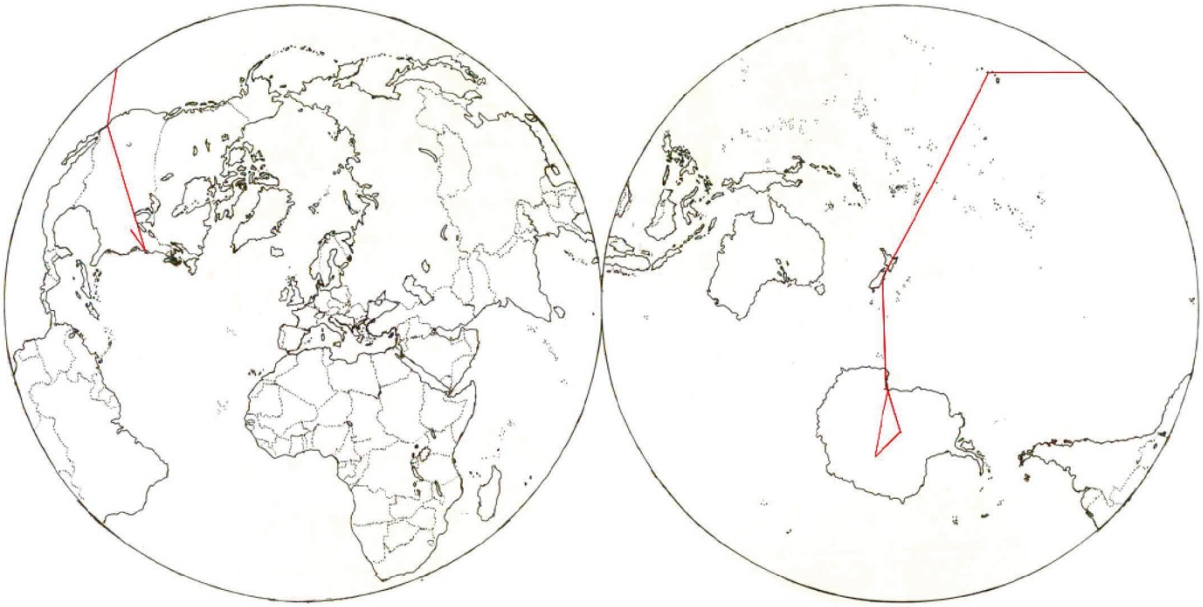
13. The trestle bridge across Dead Horse Gulch on the White Pass and Yukon Railroad from Whitehorse to Skagway, which I rode on my return from the Alaska Science Conference in Fairbanks in June, 1968. It is the most northerly bridge of this type on Earth, 215 feet above the gorge.

14. A view of Tunnel Mountain from the train. The only tunnel on the White Pass and Yukon Railroad goes through Tunnel Mountain.

15. I’m at dockside in Petersburg, Alaska, as the morning sun breaks over glaciers crowning peaks on the Coast Range. This was the most picturesque stop on the Inside Passage ferry from Skagway.

CHAPTER 5 - ANTARCTIC JOURNAL

The red line on the global hemispheres at the beginning of Chapter 5 records my first trip to Antarctica, including the South Pole, which has a day six months long followed by a night six months long, making this continent a “place of light” and an “abode of darkness.”



Which is the way to the dwelling place of light, and where is the abode of darkness? -- Job 38:19

In order to preserve the full flavor of an Antarctic expedition, the anxieties, the frustrations, the thrills, the failures, and the successes as they happened, especially an expedition in which none of the members had been to Antarctica previously and all of the members were inexperienced, I have included the day-by-day account of our activities as I recorded them in my Antarctic journal.

13 October 1968

Left Port Columbus at 12:45 PM on a 12:00 flight so missed connections at Pittsburgh and was 4 hours late arriving in Providence. USARP representative Jim Armstrong met me and took me to the US Naval Air Station at Quonset Point, Rhode Island, where I spent the night in the Bachelor Officers Quarters. The Acker Ace transmission and parts were not at the airport.

14 October 1968

Attended Mass at the Naval chapel, met Armstrong, Fred Betzer (our driller) and others at 11:30 AM and drove to lunch after weighing in and checking baggage at the air terminal. Our flight departed about 3:00 PM and we flew nonstop to Oakland on a chartered National Airlines flight. Some good views flying over the Rockies and Utah desert. At Oakland terminal some Irish pipers in kilts were entertaining. We took on some Texans and others going to Antarctica, and took off in less than an hour. We flew nonstop to Honolulu and had a one hour refueling stop. Free orchids and pineapple juice were dispensed at the tourist counter. I picked up 3 orchids for our stewardesses. Learned that the Native Hawaiians are called "muumuu’s" by Aryans. Noticed that muumuu’s were escorting old white gals who thought this was all very romantic. The airport was all decked out in Polynesian decor.

15 October 1968

Landed in Pago Pago (pronounced "Pango Pango") about 2:30 AM, refueled and took off about 3:30 PM. The stewardesses warned us to take all personal items off the plane because the natives who come in to service it are looters. Pago Pago has a duty free shop but the shelves were mostly bare. I sent Tim (my brother) a postcard and gave a Marquette and Juliet stamp to the clerk-owner? of the souvenir shop. The natives wore native attire and the air was humid and heavy with the scent of tropical flowers. Crossed International Date Line. We landed in Christchurch about 7:00 AM and went through customs, changed money, and went down to Cathedral Square where we had reservations in the Warner Hotel. Wandered through town running into other USARP people off and on. Was struck by the small, neat houses with many flowering trees and bushes coming into town, and by the small, somewhat cluttered shops in the downtown area. Entered Christchurch Cathedral and saw the typical Medieval design and architecture. The church bulletin shows the religious census. Anglicans were 33.7 %, Presbyterians were about 22 %, and Catholics were 15.9 %. Methodists were about 8 % and the others were around 1 % or less. Mormons show the biggest rate of increase. Of the top four, all declined over the past 10 years except Catholics. That evening I saw a new Glen Ford western. He was wearing the same old beatup Stetson he always wears in his westerns. When we first came into the hotel, the desk lady told which saloon (His Lordship's) was the collecting place for all the winos, drunks, whores, queers, etc. Now why would she mention that to us? Today is Tuesday instead of Monday. (As an aside not in my journal, the religious makeup meant “white” Kiwis were about 40% English—most Anglicans and Methodists, about 20 percent Scots—most of the Presbyterians, and about 18 percent Irish—Catholics and some Presbyterians.)

16 October 1968

This morning Fred and I went out to the airport and got outfitted, and learned that I would leave tomorrow at 10:00 AM. I spent the day writing OSU and the evening seeing the movie *Is Paris Burning?* in a suburb along the seacoast. It was chilly and windy, and rained after the movie.

17 October 1968

Our Constellation 121 left Christchurch at 10:00 AM and arrived at McMurdo about 7:30 PM. There was a whiteout most of the way down. The first time the air cleared was about 6:30 PM and the pack ice was beginning to break up below us. I was the first off the plane and John Ricker the Assistant USARP representative was there to meet us. We loaded aboard a snow truck and were assigned to a sleeping hut and went over to the chow hall for a supper of steaks. I turned in early. Tomorrow we take a 2-1/2 day survival course.

18 October 1968

At 8:00 AM we met in the USARP Swiss Chalet and met the Kiwis who conduct the survival course. We left via snowmobile to the instruction area near Scott Base and learned how to walk on snow slopes in the morning. After returning to McMurdo for dinner, we went back and learned how to stop each other when we were roped together on a snow slope and one of us slipped. Eight of us USARPs are taking the course. This evening I saw an old Glen Ford western, *The Violent Men*, and he was wearing his old Stetson. Because the movie was so old, his hat looked new – but it was molded the same way. It had much less character. None of our drilling equipment has arrived here, but the boat is in Christchurch.

19 October 1968

Today we practiced chopping steps in ice and walking up icy slopes using crampons. We ate dinner at Williams Field chow hall, and in the afternoon learned three ways to rescue people from crevasses.

20 October 1968

I attended the Catholic lay services in the Chapel of the Snows this morning, and this afternoon we finished the survival course by learning to build snow shelters, igloos, snow caves, etc. Dr. Feeney, Penguinologist, lectured tonight.

21 October 1968

Today I tried to line up our supplies, but learned we must wait until our stuff comes in. I wrote OSU bringing them up to date on developments here. This evening Fred and Mac arrived. Mac had the glaciology papers I left behind at OSU.

22 October 1968

This morning a bunch of us went over to see Scott's hut and saw a couple of Weddell Seals out on the ice. We went over to take pictures. They can't use their flippers to walk and sort of hump along on their bellies. Later I learned they were probably pregnant females who came out on the ice to birth their calves. They were tagged, and one must have weighed between 1000 and 1500 lbs.

23 October 1968

Today Fred and Mac begin the survival course. At noon Fred came in looking like he'd been rode hard and put away wet. I learned that our gear has begun to come in. Two Starlifters will be bringing in 40,000 lbs. of supplies each, per day, from Christchurch from now on. Today is the day the sun won't set. The next time the sun sets will be March 21, 1969. Saw a good flick, *Up to His Ears*, tonight. I paid the $2.30 free drinks bill I collected on the 18th by entering the bar with my hat on. I made a list of equipment left in Meserve Hut.

24 October 1968

Brought my diary up to date. The movie is *The Agony and the Ecstasy*. Two more boxes arrived today. It is weird the way the sun just keeps going round and round in the sky. There is a fabulous sunset around 10:00 PM which lasts until about 2:00 AM. Dawn and sunset are all one event.

25 October 1968

This morning I went to take a shower. We are allowed one per week and I arrived a week from yesterday. But no sooner did I get soaped up than the water shut off. It was two hours before it got going again. Signs are all around McMurdo to conserve water. It was 11:00 AM when I finally got out of the shower, and I met Mac and Fred and we went up to the radio shack to get checked out on our field radio. It will be some time before I savvy what comes over that radio. The others understood it (they said) but it was gibberish to me.

26 October 1968

This morning I typed a report for the photographer of an areal mapping team, and picked up my laundry which I took over yesterday. At dinner I learned a couple of our boxes had arrived up at the Earth Sciences Lab so I went up and took down their serial numbers. Then at the Swiss Chalet I wanted to find out the procedure for handling the boxes, checking contents, etc., but I ran into a copy of *TIME* magazine and was hung up with it all afternoon. There is some cat at the movies who laughs at anything. The flick tonight was *Seconds*. It was very interesting – but *not* funny. He roared all through it. But it was a sick flick which makes us wonder about *him*.

27 October 1968

Mass lay services this morning at 10:30 AM. I have met the Russian exchange scientist, Boris, and we have visited off and on for the last few days. Yesterday he said people keep asking him about travelling in Russia, and he knows nothing about it, so he asked me about the details. At breakfast this morning an officer who knows Boris corralled me and asked all about travelling in Russia. About three days ago I saw this cat with a wild beard at supper, and I said, "How long did it take you to grow that beard?" When he answered (7 months) I said, "I am trying to place your accent – it sounds Russian." That is how I met Boris. He wanted to know all of my impressions of Russia as soon as I mentioned I had visited there. He is wild about western movies – likes the shooting, violence, etc.

This afternoon Mac and I climbed up Crater Hill, 301 meters above sea level. It gives a good view of Mount Erebus, the active volcano on Ross Island, also Ross Ice Shelf, Scott Base, Williams Field, and McMurdo. The only high ground between Crater Hill and Mt. Erebus is Castle Rock, 413 meters high. Castle Rock is the plug of an old volcano. The land between Crater Hill and McMurdo is shaped like a big bowl probably a mile or more across. It would make a huge radio telescope with a bit of shaping. Crater Hill is also an old volcano – all the hills around here seem to be. Volcanic ash and rocks form all the exposed outcrops. After returning to McMurdo I attended the party USARP throws every Sunday from 5:00 to 6:00 PM.

28 October 1968

Today most of our crates arrived. I wrote up a summary of our project for John Ricker, the Assistant USARP representative, for a little booklet he wants to make to explain our work to the Navy support people. This evening some of us took a tour of Nukey Poo, the atomic power plant up on the side of Observation Hill. Nukey Poo is derived from "nuclear power." Our guide had only a high school education but seemed very familiar with all aspects of the nuclear power plant. He has been in the Navy for 16 years and took a one-year-plus course to prepare him to run the plant. The way he put it, the course started with 1 + 1 = 2 and went up through calculus. All the electronic panels in the control room are laid out in the pattern of a flow diagram, and he said he could fix anything that went haywire. He is an electronics specialist and something of a mechanic. The plant puts out 34,000 kw of power, 26,000 kw provides power to "downtown" as he calls McMurdo, 3000 kw is used to convert sea water into fresh water, and 3000 kw is used to run the machinery at Nukey Poo itself.

Tonight we saw a Randolph Scott western.

29 October 1968

Today, I took an inventory of the boxes that have arrived. All of the drill rig parts are here but the sled everything sits on, so we can’t start assembling it yet. But I did get everything moved to the assembly area so when it does get here we can begin.

30 October 1968

We moved the crates with breakable instruments up to the Earth Sciences Lab. Our crate containing the sled for the drill still hasn't arrived so we can't start assembly. I rewrote the summary of our glaciology work. John Ricker said it was too complex for these hombres. Tonight was a tremendous Slim Pickens movie called *An Eye for an Eye*. Slim was a pure 100% villain named Ike Slant. All day I was unbelievably sloppy at pool.

31 October 1968

Today is cold and windy. I came into our room after dinner and almost puked from the stench, so I used undiluted disinfectant over the whole room. But I don't know how much good it will do. We can only shower and launder once a week. This evening we had a Halloween party thrown for the USARPs by the Naval officers. It was also Commander Kelley's birthday. He is the big honcho at McMurdo. He showed up at the party with a toilet seat around his neck. I met a 28-year old commander named Contrell at the party. We talked about the war, the causes of war, and who is behind them. He was very articulate and seemed well informed. He had been in the Marines ten years and in Vietnam before coming here. We got to talking about New Zealand. Last week I had written Gerry my first impressions of New Zealand, and I summed up my thoughts by saying the difference between New Zealanders and Americans was that they were still living in the Garden of Eden where as we had eaten of the Tree of the Knowledge of Good and Evil – for better or for worse, we had lost our innocence. Contrell said New Zealanders had sold themselves short. They were bright educated people who had settled for mediocrity by accepting socialism. Mac says they are "A little more socialistic than Russia." I read *A History of New Zealand* by Sinclair. He said the founder of New Zealand was a man by the name of Hatfield who wanted to make the country "More British than Britain" and hoped to accomplish this by only accepting the "best elements" of British society as colonists – and in the same proportions as they exist in Britain. This meant the aristocracy, the artisans, the shopkeepers, the farmers, and the professional people – but not the laboring class. In my opinion this is why New Zealanders are content to spend their time skiing and mountain climbing with no particular yen to "get rich." It seems to me that by excluding the laboring class, the uneducated and unskilled workers, that Hatfield cut out the best part of Britain. That is the segment of society where all the pressure of the "have-nots" lies – the hungry people, hungry for everything, the kind of people that came to America and made us great. They are the dynamo, the driving force that keeps those above them working to hang onto what they have lest they fall back into the ranks of the "have-nots." In settling New Zealand this element was not included, and the country is like a tree without a root. The New Zealanders live in the Pacific, and some of the most industrious people on Earth border the Pacific; the Japanese, Chinese, and Americans. They are sheep among a pride of lions. And the time has not yet come, "When the lion will lie down with the lamb."

1 November 1968

This evening I took a picture of the sky in the southwest all lit up when the sun was low on the horizon at midnight.

2 November 1968

Today I started making posters for my talk tomorrow night on glacier studies in Antarctica.

3 November 1968

I finished my posters today after Mass. Up in Hut 137 Boris was getting beaten at chess by an American. It must have been a bitter pill since chess is just about the national sport in Russia. My talk tonight went over very well. I started out mentioning how glacier tillites etc., in S. America, S. Africa, India, and Australia were a clue to the existence of Gondwanaland. Then I showed the unit cell of ice, explaining how oxygen atoms control the mechanical properties and how dense packing of oxygen atoms on basal planes makes them the slip planes. Next I showed how the basal planes lie flat more and more as the pressure of glacial ice above increases, and how grain rotation and grain growth makes for basal glide to be more pronounced at depth. Then I discussed crevasses, ice falls, waves, and surges. And I concluded by presenting Alex Wilson's surge theory of the Antarctic ice cap causing ice ages in the Northern Hemisphere.

4 November 1968

Today Fred and I began assembling the drill rig. Mac slept all day and I had words with him at supper. Tonight Charley King got a letter (one week old) from his wife saying the nation has gone crazy for Humphrey and he is gaining by leaps and bounds. Last week McCarthy came out for him and at supper a report came in saying Johnson stopped the bombing (unilaterally) so I suppose this will swell Humphrey's ranks.

5 November 1968

We should get the drill all assembled tomorrow. Today we put on the second transmission. Mac and I will take a load out to Meserve Glacier, weather permitting. The movie tonight was *Mary Poppins*. As is true of all Walt Disney productions, I walk in thinking it will be a drag and walk out thinking it was a masterpiece. I hope I get a chance to see this one again. After the movie there was a fantastic midnight lighting effect in the clouds over the mountain to the South. I took a shot of it.

6 November 1968

We assembled the drill rig with the second transmission added and the engine remounted, only to discover the oil seal on the transmission leaked. This evening I followed the election on the Voice of America until 2:00 AM when ABC gave it to Nixon. I had a lot of fun ribbing the Nixon people down here (everyone seems to be one) that Humphrey would win. If Nixon lost this election after Humphrey wasn't supposed to win a state, then he would really be a loser.

7 November 1968

Today we replaced the leaky oil seal, reassembled the transmission mounting and started the drill rig for the first time. Everything works. Tomorrow we will test the hydraulic system. For the last two days high winds have kept us from taking equipment out to Meserve Glacier. The Texans who bunked with us left for Ellsworth Land today.

8 November 1968

This morning I took my weekly shower and laundry. We finished with the drill rig and had it weighed. The dynamometer said 2400 lbs. which is ridiculous. It should weigh about 1550 lbs. Tomorrow we will use another dynamometer. After moving the drill rig out of the garage we got checked out on our field radio receiver – transmitter. Tomorrow we will all go out to Meserve Glacier, weather permitting. Today the visibility was too poor.

9 November 1968

Today we took a 1850 lb. load out to Meserve, 150 lb. over the load limit but the helicopter pilot said to go ahead with it. The Wright Valley is a spectacular sight. It is a long, narrow valley completely barren. Glaciers flow down the slopes of the valley through the mountain passes, but never reach the valley floor. From the air the glaciers ringing the valley look like a string of pearls. At the place where the valley meets the Ross Sea a large piedmont glacier blocks the entrance, a white pendant on the pearl necklace.

The glacial geology party, Parker Calkin and Paul Mayewski, are living in our Jamesway hut at Meserve Glacier. Their radio isn’t working and they want a new one. I left Fritz and Mac there to set up the met (meteorological) stations and take inventory while I returned to McMurdo to arrange the next flight.

10 November 1968

After Mass I tried to get together supplies for the next flight (Monday), but was not too successful, since nobody feels like working on Sunday. I did get the pipe and put in an order to have two barrels cut in half, though. The pipe will be put in holes in the ice and used as anchors for our equipment up on the glacier.

11 November 1968

This morning I flew my load out to Meserve but when the pilot landed the helicopter was leaking oil so he didn't want to take any passengers back. He left me and a photographer and said he would return in about four hours. I decided we would have time to hang the rope ladder over the side of the ice cliff which runs all around the lower end of the glacier. But in order to get up on the ice with the ladder, anchor pipes, maul, rope, ice drill, etc., we had to travel up the mountains to a point where the ice cliff smoothed out at the upper end of the glacier. Fritz and Mac started on ahead, leaving me with 95% of the load. Including myself, I reckon I toted 300 lbs. up the mountainside and back down the glacier to the point where we wanted to hang the ladder. Then the fun started. Before I had left our camp I had tied a load of pipes and ladders to a rope which was hanging over the ice cliff. When I got up above, Fritz had succeeded in chopping the rope free – it had sunk into the ice and frozen since last season. Mac had the ice drill stuck in the ice after drilling down about ten inches. They could not pull up the load I tied onto the rope, so I pulled it up alone. Just as it came over the edge of the cliff, the load slipped out of the rope and tumbled back down. So I lowered Fritz back down on the rope while Mac chopped the drill free with his ice axe. It turned out that our pipe was too large to fit in the drilled holes. Fortunately a little further up the glacier two pipes were anchored in the ice from a previous season. I went over and threw down the rope which I hauled up. Fritz tied on the rope ladders and I heisted them. I hooked one over the pipe and threw the ladder over the edge. But it flipped off the pipe and fell over the cliff, and got hung up about halfway down, so Fritz couldn't reach it. About that time the helicopter returned, picked up the photographer, and left without me. I pulled up the other two sections of rope ladder, clipped them together, tied one end onto the anchored pipes, tied the rope to the other end, and tossed the rope down to Fritz. Then he pulled the ladders down and by rocking the rope we worked the hung-up ladder free. Then I pulled up the third ladder, fastened it to the other two, and I and Mac came down off the glacier. By then it was after 4:00 PM.

Parker and Paul came up to the hut for supper, and Parker told me odd facts about Wright Valley. For one thing the river in the valley flows from Ross Sea inland to the head of the valley, because the valley was gouged out by glaciers which moved "down" to the sea so that the head of the valley is scooped out more than the foot of the valley. Also at the head of the valley is Lake Vanda which is always frozen even though the water near the bottom of the lake is 80°F. Parker said some think the salt in the lake is so heavy that the water is segregated in layers and doesn't "turn over" because convection cells don't operate as in normal lakes. He says the sun's rays pass through the ice, are absorbed by the dark lake bottom which causes the water near the bottom to be heated. But this heated water never circulates to the surface because there is no convection. Lake Vanda is fed by the River Onyx which originates from the piedmont glacier at the Ross Sea end of the valley and is supplied by tributary streams from the glaciers along the valley walls during the summer season. The Onyx River is less than twenty miles long but it is the longest river in Antarctica. Usually it is dry, but in the summer it is about 4 feet deep and a few yards wide. The head of the valley around Lake Vanda looks like a miniature Grand Canyon.

12 November 1968

This morning Mac finished preparing the instruments for the met stations. One station is near the hut and is functioning. The other station will be up on the glacier. The wind recorder records total kilometers passing, average wind velocity, and wind direction. The pyrheliograph measures the relative amounts of heat reflected and absorbed, the hydrothermograph measures temperature and humidity, and

the sunshine recorder measures the daily hours of sunshine. At 8:30 AM I radioed in a list of supplies we needed and asked if a helicopter would come out to get me. They said one would come out at 2:00 PM. About 3:30 PM one flew by on its way down to Lake Vanda and returned – but didn't stop. The New Zealanders are at the lake and at 5:30 AM I went outside and saw the tractor-train moving way down in the valley floor on its way to Lake Vanda. About suppertime it dawned on me that the USARP people probably thought I was back at McMurdo and would collect the supplies I radioed-in for this morning. So I radioed again to tell them that I was left out at the glacier and wanted to be returned on the earliest possible flight. Just as the McMurdo Radio Station had connected me to the USARP office the gasoline ran dry on our generator and the radio went dead. By the time we got it operating again the USARP office was empty. It was just a few minutes later, but I suppose they went to supper since it was 5:15 PM. So I gave my message to the Radio Station instead. They said a helicopter would be out to pick me up tomorrow.

13 November 1968

This morning another tractor train and another helicopter went down the valley to Lake Vanda. I decided we would try to install the other met station up on the ice. Fritz went out to climb up the rope ladder and lower the rope. A few minutes later he was back saying it was impossible to climb the rope ladder. It hung down from an overhang in the cliff and when he got on the first rung the ladder got to swinging in the wind and twisting around. All his weight was supported by his arms because his feet were sticking out in front of him on the ladder. By the time he had climbed four rungs he was exhausted. So I went out and climbed the ladder, but when they tied on the met station house I couldn't pull it up over the lip of the ice cliff. It was wedged in a notch in the ice. After a few more tries we gave up.

Later on in the afternoon the helicopter finally landed. I climbed aboard and it continued on to Lake Vanda and took on another party. Then it flew over a mountain pass into nearby Taylor Valley where it took on a couple of others at a camp on the shore of another frozen lake. From the Taylor Valley we flew back to the entrance to the Wright Valley and landed at another camp. Then we returned to McMurdo. The scenery was breathtaking – fantastic. Rugged cliffs, soaring ramparts, tumbling glaciers. It was another world. I took 30 pictures only to discover the film never got attached to the take-up roll and I lost the entire roll. Another person, Norman Robilliard from Victoria, B.C., was also taking pictures and I asked him for duplicates. Damn!

We finally landed at McMurdo and I arranged for a Saturday flight in the USARP office and then went to supper. As I suspected, they had done nothing about my request for supplies.

14 November 1968

Today I made out the list of supplies for the Saturday flight. After supper I saw a film on the Chapel of the Snows which was produced by Father Patrick Peyton's rosary crusade. At about 11:00 PM I went over to the galley for a snack and got to talking with Loren and the enlisted men he introduced me to when he invited me into their bar last Sunday. We argued about the expense of running McMurdo, the war, and other things. At supper there was a note on the menu saying a PFC has terminal cancer and wants cards from U.S. bases all over the world. I think I have problems.

15 November 1968

After my weekly shower I tried to line up some stuff Mac wanted in a letter he sent back with the helicopter pilot who took the thermometer box out to Meserve Glacier for me yesterday morning. I was successful in part anyway. Then I made up a list of equipment to be taken out next week. We needed rope and pulleys to winch our supplies up the ice cliff, and a wooden ladder instead of a rope crevasse ladder

to climb the ice cliff. The thermometers for the met stations will have to be requested by radio to O.S.U. They should have my request tomorrow. I spent an hour waiting for the booze Fritz and Loren asked for. Actually I'm not supposed to get it for Loren since he is an enlisted man. Then I got the shear bolts I requested made by the machine shop yesterday. I botched the measurement but can use the bolts anyway without washers. This evening I saw a new remake of *The Plainsman* with Don Murray. Coop's version was much better. After 11:00 PM I went over to tell Loren I had his hooch ready. He gave me $3.00 for a $2.50 bottle of Canadian Club. So my hour wait earned me 50 c. Ha! Back at the galley two sailors who were drunk and had been fighting were arguing who won. One of them said, "You didn't beat my ass!" Maybe not, but he sure beat his face!

16 November 1968

I spent most of the day getting supplies ready for the flight out to Meserve Glacier at 1:00 PM. I had told Bresnahan (the USARP outfitter) that our helicopter left at 8:00 AM in the hope that would put a burr under his tail. But it didn't work. He told me he couldn't get my pulleys so I called Lt. Corcoran and Chief Hutton and through them I got two pulleys at Bldg. 52 from Mr. Clark. Here I am supposed to be the cheechacho (tenderfoot) and Bresnahan is supposed to be the old pro, but I get stuff he can't!

The Norskies were supposed to leave this morning at 10:00 AM and we all bid them adieu but at lunchtime there they were again. It seems bad weather came up from the south at the last minute. They plan to go to Queen Maud Land via Pole Station, and it is the longest air-flown mission thus far in Antarctica. The group from Maine went out though. They will be working in the Dry Valleys, two of which are Wright Valley and Taylor Valley ("dry" meaning ice-free). After dinner I learned my laundry wasn't ready so I took it from the Naval Laundry and put it in the USARP laundry. Then I loaded our supplies, fired off the first 25 pages of this journal and my first roll of film to Paw, and drove my load down to the helicopter pads. After some 30 minutes the pilot showed up. He said we would need a platform dug in the ice before he would attempt to land on our glacier. After loading up, I got my laundry and we were off. At Meserve Camp not much had been done. I brought in the new thermometers, tape, and bearings so the surveying and meteorological work could begin. I clamped on the extra 10 meters to our nylon rope ladder up the cliff and grounded the bottom. That was about all we accomplished. Fritz says many of the surveying markers on the glacier and on the ground are gone.

17 November 1968

This morning we radioed in the local weather conditions to McMurdo – this is the price I paid for getting the thermometers. Then we took our ice cutting equipment up the ice cliff. I plan to level our helicopter pad on the ice with a 2" x 4" board 16' long, and I carried it up to a fairly flat spot above survey marker G3. The surface of Meserve Glacier looks like a series of frozen waves, with relatively flat terraces between the waves. We planned to make the pad on the ice terrace between markers G3 and G4, which was less level than the spot above G3. Nevertheless we took our tools to that spot and began work. The starter rope pulled out of our jackhammer, and I asked Fritz for the wrench (which I told him to bring) but he had brought a worthless wire cutting pliers instead. So we had to make do with a chainsaw, pick, and shovels. Late in the afternoon the chain saw blade gave out on us and we flipped to see who would go down and bring up the new one (and the wrench). Mac lost, but as it turned out we all did because he didn't have the strength to climb back up the rope ladder. Fritz and I pulled up the chain and wrench by rope, fixed the saw and jack hammer, and took them and most of our equipment up to the site where I put the 2" x 4". I decided we will make the helicopter pad up there instead. We can use the place we cut out for storage, but the slope is too great and at the upper end we would have to cut through 5 feet of ice to make a helo pad. When Fritz and I got down Mac was busy making supper and ice cream. I wonder how Parker Calkin and Paul Mayewski like their sardines? I guess that is what they live on for dinner and not much better for supper. The day after I flew back to McMurdo, they left our hut and were

flown to the lower Wright Valley where they live in a tent.

18 November 1968

The chopper that was supposed to bring in fuel yesterday arrived this morning with John Gunner. I requested a mink or sable lined toilet seat by radio this morning. Today we made the helicopter landing pad up on the glacier at the site just above pole G2. We used the jack hammer today and three of us couldn't keep up clearing the ice away which it broke. We worked from about 9:00 AM unloading the chopper and loading on used barrels and jerry cans, until 6:00 PM when we finished the helicopter pad.

19 November 1968

No radio contact with McMurdo this morning. We started work on the wooden ladder up the ice cliff and discovered that Bresnahan gave us the wrong size nuts for our bolts, no washers, and no drill bits for our drill – and not enough good two by fours. Mac made a drill bit out of a 1/4 " bolt and we made do with what we had. By the end of the day we had a 25' ladder up to the first break in the ice cliff. Still no radio contact with McMurdo. We barely heard Parker Calkin and Paul Mayewski try to call in the evening. They also had no success.

20 November 1968

Still no radio contact with McMurdo. Fritz went up the rope crevasse ladder and lowered himself by rope to the first break in the ice cliff and began chipping out a platform with his ice axe. The rest of us made another ladder to continue on from there to the top. After lunch a helicopter came in with our drill rods, mail, and a message from John Ricker at McMurdo saying a magnetic storm had caused a communications blackout. We got the pilot to try to land on our helicopter pad up on the glacier. He did, came back and took Fritz and I and three crates of drill rods up to the pad. Then another helicopter came up with the other two crates of drill rods and took us down. Then Fritz took the SIPRE core drill and made holes for poles to fasten our wooden ladder to on his platform while I chipped away at the ice cliff so the ladder would fit better and the others worked on the second ladder. Then Mac went in to fix supper and the rest of us took the ladder up to the platform. John was up on top with a rope around the top part of the ladder, Fritz was on the platform to guide and hold the ladder, and I climbed up the first ladder carrying the second ladder. It was tough going but we finally got it up there. Then, when we were trying to position it, both two by fours cracked in the bottom five feet. So we tied it down, and called it quits for the day.

21 November 1968

We finished installing the second ladder and got started on the winch and pulley system. After dinner Mac and John measured the strain net over our first drilling site, and I installed the top pulley above the ice cliff. The weather has been overcast lately and no helicopters came today.

22 November 1968

This morning the others began making the ice pad on which the platform for our drill rig will be built. I installed the bottom pulley near our hut and pulled up the meteorological station box that will be on the glacier. Shortly after I finished, Parker Calkin and Paul Mayewski came up to the hut. Then the boys digging the spot for our drilling platform came off the ice. The new chain on the chain saw broke because the rivets had been flattened so much they cracked the chain links. Helicopters started coming up the valley. One landed here and Fritz and I flew up to the helicopter pad to unload the tripod, drill cores, etc., which it brought. The tripod will be used to raise and lower drill rods down our boreholes through the ice. The pilot had a note from Bresnahan "explaining" how my supplies got botched, and he sent a

note saying another flight would be in bringing the next load including the two by fours. But the second chopper never arrived.

23 November 1968

I flew back to McMurdo today to supervise loading of the drill rig and get the cut barrels and pipe jack from the machine shop. The barrels were cut lengthwise to be used as basins where we can screen out ice chips from the drilling fluid pumped out of the boreholes. As soon as we landed I showered and laundered my clothes. Later at supper I learned that the pumping station had been flown out and the drilling rig was weighed at 1527 lbs. and would be flown out tomorrow by Commander Perrigan, the "Top Rotor" of the helicopter crew. The lumber for the drilling platform was not flown out.

24 November 1968

This morning I radioed my people at Meserve Glacier and told them to build a platform with the lumber they had, since the drill rig may be flown out. Scott Smithson and three others from the University of Wyoming are out there, so with Parker and Paul that makes nine at Meserve Hut. At Mass this morning a priest was flown in from Christchurch, so I went to confession and communion. During his sermon he said he owed his vocation to some American servicemen.

Just as we were leaving with a load of lumber, bad weather came in and our helicopter returned to McMurdo. Commander Perrigan decided to fly the drill rig in tomorrow anyway because he expected bad winds.

25 November 1968

All day we had almost "whiteout" conditions, so no helicopters left McMurdo. I got the cut barrels yesterday but the pipe jack wasn't ready. Today I got a 4' x 8' plywood sheet aboard our helicopter, beer for Fritz, and a haircut for myself.

26 November 1968

Our helicopter left for Meserve Glacier at 1:00 PM with a load of diesel fuel. The helicopter with the lumber followed, but our pilot had trouble landing at Meserve Hut due to bad winds, and radioed the other pilot not to come in. So he unloaded in the valley floor about 700 feet below us. One of Smithson's men came in with me so now there are eleven in Meserve Hut. They are all mad because no helicopters have come in for days, and the helicopter that landed wouldn't take anybody out. We radioed back to McMurdo and burned John Ricker's ears about the bad service.

27 November 1968

At 7:30 AM, we radioed John Ricker as arranged last night and he said 3 helicopters would be out – two this morning (one with the drill rig) and one after dinner. The first one arrived with no cargo, but said the drill rig was on the way. We gave him our mail and a list of supplies we need, and got up on the glacier. Parker Calkin and Paul Mayewski left with the helicopter. Shortly Commander Perrigan came down the valley with the drill rig sling-loaded. It was a big moment. After a few pauses he put the drill rig right on our wooden platform, cut loose, and flew away. Two big shots were in the helicopter to observe the big event, and a photographer from the first helicopter was up on the ice with us taking pictures. I took a few myself. Gerry Holdsworth said the drill rig could not be taken out in one piece, in his letter which arrived Sunday. Not only did they bring it in, but took passengers as well! After unloading the drill rig, Perrigan landed on the helicopter pad down by the hut, to tell the people below that they would take out the photographer. Then they landed on the glacier helicopter pad, took him aboard, and left. He wasn't

used to walking on ice with crampons, and he didn't want to climb down our ladder to the hut. The rest of us transferred the drill rods, tripod, cable, drill cores, all in crates, from the glacier helo pad to the drill rig platform. Then we went down to the hut for dinner. Shortly after 2:00 PM another helicopter came in and we had him bring up the lumber, etc., left on the valley floor yesterday. Then he sling loaded two barrels of diesel fuel and other supplies up to the drill rig site. I went with him and he dropped the load on a pretty steep slope of ice about 200 feet from the drill rig. I was afraid it would slide off the glacier, but it didn't. Then we landed on the helicopter pad above our drilling platform on the glacier and I loaded two more drums of diesel fuel in the second sling we had. They told me another helicopter was below at the hut with two barrels of gasoline. I said I would stay here and they should bring both barrels up. When the other helicopter landed, I unloaded one at the glacier helicopter pad, and said I wanted the other and four 15 gallon barrels of trichloroethylene sling loaded and dropped by the drill rig. I said I would go down and get a sling since they didn't have one. When I got to the drill rig, I saw that the second load had been dropped even further and more precariously than the first load. I roped both loads to a copper stake in the ice the best I could, and took up one of the slings, but the helicopter left before I arrived. Fritz and a crew member from the helicopter were left behind. I told them to prepare the load, and I went down to the ladders and got the rest of my crew up on the ice. They were in the hut sleeping! I chewed some asses! The helicopter that left the glacier helicopter pad landed on the hut helicopter pad, but left without taking the lumber up to the glacier helicopter pad. We all went over to the drill rig and used the winch on the rig to pull over the two precariously-dropped loads to the platform. In the meantime the helicopter returned, hooked on to the load up on the glacier helicopter pad and dropped it right next to the drill rig. I don't know why the other pilot couldn't have done that! We moved the drill rig around to the position of our first hole, went up to the glacier helicopter pad, and belayed the pumping station down to the drill rig platform. Then we called it quits. We had cleared the helicopter pad of all equipment we needed to drill the first hole, and had worked from 7:00 AM to 7:30 PM.

That evening Scott Smithson, who is a ham radio buff and radios every night from our hut, contacted the first ice-breaker ship of the year breaking a path to McMurdo Station. It has been a big day; a big, productive day. I worked the asses off of my crew.

28 November 1968

Thanksgiving Day in Antarctica – but not yet in America. I wrote a "thank you" note for the helicopter pilots but none came in today because of weather conditions. We put up the tripod over the drilling rig, got the pumping station working, and dug pits for our circulation tanks. Then about 6:00 PM we quit and returned to the hut where Smithson's crew was making a Thanksgiving supper of Lobsters and Steak. We told stories, drank a few toasts, and then Smithson got on his ham set and talked to people from New Zealand, Japan, and the Station.

29 November 1968

A low lying cloud layer moved down the valley this morning – down being inland from the sea – and evaporated before it reached our camp. Still, it lingered most of the day so no helicopters came in, although an afternoon flight was on "hold." John and Mac set stakes in the ice fall above the waves on the glacier, while Fritz and I installed the barrels and troughs for recycling the drilling fluid through the pumping station and drill rods. That was all we could do until a helicopter brought in the tools we needed to bolt down the engine which had become loose on the sled of the drill rig. Mac and John weren't back by 8:00 PM and we thought they may have fallen in a crevasse. Just as we were preparing to search for them, Fritz spotted them flashing a mirror from the top of the arête between the Meserve and Hart Glaciers. They arrived at the hut an hour later. Today, I got a picture of the Skuas that scavenge our garbage pit.

30 November 1968

Today was too windy for helicopters so we could not work. I washed and laundered. Hopefully the tools we need will arrive tomorrow.

1 December 1968

Right after noon a helicopter came in and took the Wyoming bunch to McMurdo. A little later Bresnahan came in on another helicopter with our supplies and we finally got the lumber up on the glacier helicopter pad. John Kalafut came in from Byrd Station with the inclinometer and showed us all how to use it to measure the tilt in the holes we would be drilling. He is from CRREL and an electrical engineer graduate from Farleigh Dickinson College in New Jersey! I thought General Beadle College in South Dakota was far out.

2 December 1968

This morning Fritz and John took the lumber and other supplies from the glacier helicopter pad to the drilling site. They set up a shelter and made final preparations for drilling by installing the pipe jack and screen. Mac surveyed the locations of the two drill holes down to the tunnel under Meserve Glacier that Gerry Holdsworth had dug last year, and Kalafut and I worked on a housing tube for the inclinometer. After lunch Fritz and John prepared to sink the first drill rod. Mac finished his surveying, and Kalafut and I went up to the tunnel drill holes (two holes about 6” in diameter Gerry had drilled from the glacier surface to his tunnel dug under the glacier), broke off the plug capping one, and lowered down a pipe to see if the hole was open all the way down. It was. Fritz came down and said the hydraulic system on the drill rig wasn't working. That's all I needed! Apparently the tunnel is still open under the ice because the weight of the pipe on our cable suddenly disappeared but the cable could still be lowered, so the pipe must have hit the tunnel floor and the cable was just piling up inside the tunnel. After pulling out the pipe, I took Kalafut up to the drilling site. The helicopter to take him back to McMurdo appeared so we went back to the hut. The helicopter brought back the Wyoming party. While they were fixing supper Fritz and John came back from the drilling site. Fritz said the hydraulic system is working now. He doesn't know why it failed.

3 December 1968

A helicopter came at 9:00 AM to take the Wyoming party out – just after the USARP Remote radio said one wouldn't come until 1:30 PM. This is typical. Don Murphy of the Wyoming party will stay here. I had Fritz and John begin drilling while Mac and I took the inclination of the holes into Holdsworth's tunnels. Our batteries were almost dead and the Simpson meter was dead. Mac got an ammeter from Parker Calkin’s battery charger and we ran off one shot on the camera inside the inclinometer. The camera takes photographs of where a vertical pendulum points on a bull’s eye target, thereby giving the azimuth and tilt of the borehole at a given depth. At noon Fritz discovered the problem with the Simpson meter – a blown fuse which he replaced. How obvious! After dinner Mac and I lowered the inclinometer into Holdsworth's holes and took readings every one meter. The second hole was too tight and I had to ream it out. While Mac went down to get the drop-reamer I made yesterday, I went up to the drilling site for some rope and to see how things were progressing. They were putting on the second drill rod and had it way up at the top of the tripod screwed into the first drill rod. When they started turning the cathead the drill rod unscrewed and fell on my arm. The pumping station's hose broke off when it hit the ice. So they had to remove the broken elbow pipe, thereby transferring the connection to the drill and converting the pipe from a U to an L by eliminating one elbow. I went back down and Mac and I reamed out the second hole and measured the inclination. Back at the hut we prepared to develop the film and I discovered a bubble in the fluid which dampens the pendulum of the inclinometer. If that

bubble showed up in the developed film we were sunk. Fortunately it didn't seem to interfere too much. But getting that bubble out will be a bitch! About 5:30 PM Fritz and John came down drenched with diesel oil. They had broken the second elbow on the hose to the drill rods, so if we continue using the pumping station, that joint will have gone from U to an L to an I. They also used up one 55 gal. drum of diesel oil and 1-1/2 15 gal. drums of trichloroethylene. We only have four 15 gal. drums of trichloroethylene and they used 1-1/2 to go 25 feet down. At this rate we will only be able to drill 66 feet, and the hole was to be over 300 feet – the last 50 ft. or so into bedrock at the bottom of the glacier. They said the chips of ice do not come up out of the borehole with the pumping fluid unless they use the mixture they are using – some 22 gal. of trichloroethylene to about 66 gal. of diesel oil, a 1 to 3 ratio. We calculated a 1 to 5 ratio would allow the ice chips to just float, but apparently at that ratio they get clogged up in the hole or in the pumping system somewhere, since the screen doesn't intercept all the chips and some go on through the pump. Operating the pumping pressure at 300 psi (just below the "blow" pressure on the safety valve) would still not bring up the chips at less than a 3 – 1 ratio of diesel to trichloroethylene. But at a 3 – 1 ratio perhaps only 20 psi would bring up the chips and the flow rate was perfect.

Another problem developed from a crack down the seam in the second barrel, so that it could only be filled 1/3 full with pumping fluid. Chips came through the screen and got into the second barrel and sucked on up into the pump and through the hose into the drill rods. But since the barrel could only be kept 1/3 full sometimes the pump sucked up all the fluid and then began sucking air. This caused the chips to freeze in the elbows and small pipe constrictions between elbows. Then when more fluid came into the barrel after increasing the pumping pressure to near 300 psi suddenly the fluid blocked by the frozen chips would force through the constriction and surge down the drill rods and back up the hole. It came out so fast that when it hit the drill-rod chuck it was deflected 90° and spread out in a big fan – just like a fountain – over 20 ft in diameter. It drenched Fritz and John from the waist to the knees. This happened 3 or 4 times.

We were all pretty discouraged that evening. Mac and I need more ethylpropyl alcohol to fill in the air bubble on the inclinometer and we haven't any. Even if Fritz and John solve their pumping problems it seems like they will be out of trichloroethylene soon, and apparently they need it in a 1 – 3 ratio to diesel if the chips are to come up. They think the fluid is being forced into natural cracks in the ice. We will both try again tomorrow and see what happens. If there is no improvement – or hope of improvement – we will have to dry-core all our holes.

Fritz says the fluid even disappears into cracks in the pit we dug to house the second barrel with the split seam. When the helicopter came in this morning I gave the pilot a message to give John Ricker at USARP asking him to contact Lyle Hansen at Byrd Station for permission to have a vacuum tight cylinder made to house the inclinometer and to lend us a thermistor so we can get inclination and temperature data inside a wet hole. Otherwise we will have to bail out all the pumping fluid some way. Scott Smithson told me that geothermal heat from the bedrock drilling will require cores and temperatures to 1/100 of a degree – even then he said the analysis changes with the type of rocks, and the rocks are changing continuously in this area. So our cores would not be a reliable guide for the bedrock at any other place under the glacier. So our geothermal heat would just be local under that hole.

4 December 1968

Today, Mac and I decided to re-log the holes M1 and M2 over the tunnel. We logged M2 first since we didn't get all of it on film yesterday. But water had leaked in M1 and almost frozen it shut. In an attempt to open it, our reaming tool got stuck some 8 feet down and we had to dig it out. Then when we began to develop the film we discovered it was stuck in the inclinometer. So the whole effort was wasted. We will try again tomorrow. Fritz and John didn't fare any better with their drilling. There is no doubt

about it now. The drilling fluid is seeping away into cracks in the ice, and at an intolerable rate. They filled the drill hole by pumping in fluid. The hole emptied itself of some 20 gallons in 3 hours. That about settles it. We will have to dry core. We have a radio blackout inside and after dinner we had a whiteout outside. So we have no communication with McMurdo. I learned that when Bresnahan was out here 3 days ago and went up in the helicopter to our glacier helicopter pad, he started to walk down to the drilling site without wearing ice crampons. Without crampons he couldn't have gotten off the glacier alive. But John warned him. Bresnahan is the supply boss whose incompetence and attitude have been boring everyone. I'll never forgive John.

5 December 1968

Today we made two attempts to measure the inclination of hole M2. Both failed. The first time the film had some double exposures, although we may be able to use it. The second time the film didn't wind. Fritz and John lost one drill bit down the hole in their attempt to pull the rods out of the hole and prepare the site for dry coring. The weather was a whiteout and windy to boot. Later it all cleared.

6 December 1968

This morning the helicopter came with the SIPRE core barrel, which arrived at McMurdo two days ago. The old cutters were shipped too although I gave McMurdo instructions to re-grind them. Worse than that, the new cutters and the cutter holder that bolts onto the core barrel were missing. Gerry Holdsworth didn't send them down separately either. I sent Fritz back to McMurdo to grind the cutters and try to make a cutter holder – and to fire a wire off to Ohio State Univ. asking what happened to the new cutters and holder. I also sent a letter to O.S.U. explaining the "progress" we have made.

We made two attempts to record the inclination of hole M2 today. The first time the film wound but was blurred. The second time it didn't even wind. A group of three Kiwis from Lake Vanda came up for a visit and we invited them to stay for a steak supper. One of them is named Charles Hughes. He is a 3rd generation Kiwi but doesn't know where the Hughes' came from originally.

7 December 1968

This morning we discovered why the inclinometer film was blurred. The pendulum damping fluid was clouded by crud that somehow got in the compass-target chamber. We twice filtered the fluid and that cleared it up enough to use. But when we reloaded the inclinometer with film and took it up to re-log hole M2, the hole was partly constricted because water had gotten into it and frozen to the walls. At every turn we have been frustrated! I think a poltergeist is haunting the glacier. I am considering bringing the McMurdo chaplain out here and having the glacier exorcised.

8 December 1968

This morning I checked out the quartz thermometer. It worked, amazingly. It's about the only thing that works around here. Fritz and John Ricker, the USARP helicopter coordinator, came out after dinner. He tromped up to the drilling site and instantly began telling us what to do. He's here 10 minutes and has all the answers! Fritz had some good ideas about using some forty-three 5-foot long auger sections stored at McMurdo. I sent him back to see about adapting them to our drill rods. John dug out the entrance to Gerry's ice tunnel and we went in to get at the food cache in there. Huge ice crystals had sublimed all over the walls and ceiling of the tunnel. They looked like giant snowflakes, some of them were several inches across. It was a fairyland. We can use the tunnel as our icebox. After supper we chopped out the crevasse rope ladder that had frozen into the side of the ice cliff. Mac was lowered over the edge by rope and chipped it out with an ice axe. It was after midnight before we finished.

9 December 1968

We slept later than usual this morning. Mac and I tromped around the glacier today and we saw some interesting things. Earlier he had gone down to one of the lower waves and noticed that the ice just below the wave terrace was visibly thrusted out over the ice underneath. So he had begun a tunnel into the wave just above our drilling site at G4, and the ice bubble orientation is aligned at approximately a 45° angle and almost perpendicular to the wave front. He took me down to the overthrust wave he had seen earlier, and in that vicinity on down almost to the snout of the glacier I noticed a series of wavy parallel zones of amber ice alternating with white ice, which continued along the left side of the waves as we walked down. They dipped inward around the wave terraces and dipped back outward around the wave fronts, so as to define the intersection of a plane with the ice surface which dipped into the ice at a very shallow angle with the surface. (Not in my journal: Gerry Holdsworth had found a layer of “amber ice” in his ice tunnels at the bed; perhaps shearing along a slip plane had brought this amber ice layer to the surface.)

10 December 1968

Today we attempted to drill at site G4 using the SIPRE core barrel. Yesterday we also tried and only got six inches of core before the barrel jammed with ice. Ground-up ice was coming up between the ice core and the core barrel. This morning we cut away part of the cutter holder in order to reduce the ice pulverization by the cutters. It worked somewhat. We got about two feet down before the barrel was jammed up again. By the end of the day we were down some 25 feet, but we got 5 feet of that yesterday – mostly by hand drilling. Today we averaged only 2 feet per hour. After supper I redesigned the cutter holder along the lines of our hand-operated SIPRE core drill, and packed it and the cutters (which must be built-up and reground) for shipment back to McMurdo.

11 December 1968

A helicopter brought Fritz and the spiral auger sections in at 9:00 AM. He said the USARP people are getting put out with us, and if we lose these augers down a bore-hole, we must replace them. By noon we had all the sections carried from the helicopter pad on the glacier down to the G4 drilling site, and were ready to start. Everything worked like a dream! We drilled 60 feet at 30 feet/hour, and quit only because the auger sections – by their own weight – were going down faster than our hydraulic feed rate! We will drill a hole through the connection between the augers and the drill rod, and put a pin through the hole. Then we can lower the augers by the hydraulics, and regain control over the drilling rate. When we went down to the hut we found Parker Calkin and Paul Mayewski were back. A helicopter brought them in while we were drilling. Parker had a note for me from John Ricker at USARP saying that I should return to McMurdo for the flight to Plateau Station where I will re-log Scott's borehole.

12 December 1968

This morning I learned by radio that some congressman and Dr. Jones of the National Science Foundation are coming out to our glacier. I spruced up our cabin while the others went up to start drilling. At 1:00 PM they came back for dinner. They were down 100 ft. in the hole. Just as we were finishing dinner two helicopters came with VIPs. They all took pictures and I invited them inside the cabin for a short explanation of what we are doing and why. They seemed interested and a few asked questions. Then they went outside for more pictures. Some climbed the ladders up the ice cliff. Others crawled in the tunnel. One brought out a huge ice crystal which several of the others photographed. Then they signed our wall which visitors over the year have autographed. I left with the second helicopter since I was scheduled for a Plateau flight tomorrow. We went over Wright Upper Glacier and back via Taylor Valley. Then we stopped at the penguin rookery near Shackleton's Hut at Cape Royds at the northern end of Ross Island.

They were hatching eggs and the Skua Gulls were trying to harass them off their nests of stone pebbles so they could get at the eggs. A helicopter crewman said the male and female penguins take turns incubating the eggs. One will waddle out to a crack or hole in the ice and gorge on fish, waddle back and sit on the egg for two weeks, while his mate goes fishing. The nearest crack looked a half mile away, and penguins were waddling back and forth between it and the rookery. Broken penguin shells were scattered about, so some of the Skua Gulls were successful. I was told they really have a field day when the baby penguins are hatched and go out to sea. When the gulls lay their eggs I guess the penguins do the same thing to them – or so I was told. On the way to Cape Crozier we saw the icebreakers coming in from a distance. After leaving the rookery we flew out and circled them a few times. There were three icebreakers, two up front and one trailing. The two up front were side-by-side, but several hundred yards apart. One would ram into the ice and wait while the other backed off, preparing to ram. They took turns ramming the ice in this way. The ice between them got broken up in the process, resulting in a broad water highway through the ice. But by ramming, backing off, and ramming again, each icebreaker covers the same distance again and again with only small net gains. It must be equivalent to making over a dozen voyages down here in clear water.

When we landed at McMurdo I saw Ken and he told me the Plateau flight was leaving in about an hour. I just had time to eat. Karl drove me to the airfield on the ice road which goes out over the ice and up onto the Ross Ice Shelf where Williams Field is located. When the sea ice melts, they take the land road to the airfield via Scott Base. But that road is being repaired at the moment. Karl said the sea ice is still thickening, even though we are well into the summer season. The Ross Ice Shelf in this vicinity is only some 20 feet high. At most other places it is over 100 feet high. There are two landing strips at Williams Field. One for planes with skis attached to the wheels, and one for planes coming in from New Zealand without skis. The second field is an ice runway kept free of snow by local winds. When we arrived at Williams Field we learned that the Plateau Flight would be delayed 6 to 8 hours because the ski on the nose of the plane needed repairs. We returned to McMurdo and I did my laundry and saw a movie (*Maya*). After the movie I saw Ken Moulton in the bar and asked him the status of the Plateau Flight. He phoned down to Williams Field and discovered it was still delayed. He said one of his people would pick me up at my bunkhouse when they were ready. I went to bed – after discovering my camera didn't work when I changed films.

13 December 1968

Friday the thirteenth was unlucky for me. The USARP people didn't pick me up for the Plateau Flight which left at 3:00 AM this morning. Now it will have to be rescheduled and there is only one flight every week or two. Damn! I will probably return to Meserve Glacier tomorrow. In the meantime I will see what progress is being made with the cutter holder for the SIPRE core barrel, and try to get a casing pipe for our first drill hole. I sure hope we can get all of these auger lengths back up the hole! The congressmen leave today.

This afternoon I tried to fix my camera but without success. I had it all taken apart and was ready to dismantle the lens and shutter housing when I looked at all the parts lying on the table – then I panicked and put the camera back together while I still remembered where everything went. When the USARP representative at Christchurch comes back from Byrd Station I will give it to him to have repaired in New Zealand. I was called up to see how the machinist had modified the cutter holder for the ice core barrel. He will have to make a new one. Two of the machinists heard that I had obtained a fifth of whiskey for Loren in the mechanics shop, and they wanted me to get booze for them too. Later this evening I learned that Loren's only brother had been hit by a train and he returned to the States. I think I've got problems! Tony Gow returned from Byrd Station and told me that the drill used by the CRREL people is frozen at about 7500 feet. They are trying to get it out by dumping antifreeze down the hole.

14 December 1968

This morning I returned to Meserve Glacier. The crew had penetrated the amber ice layer yesterday and hit rock at 179 ft. They must be very close to bedrock – maybe on bedrock – even though Gerry's gravity measurements didn't predict bedrock until about 230 ft. We pulled out the augers and measured the depth at 145 ft. That means about 34 ft. of chips are still in the bottom of the hole. We tried to core through them using the 10 ft, 2" ID diameter core barrel with a diamond bit, but only got about 4 in of core consisting of powdered ice jammed into the core barrel just like in the case of the SIPRE core barrel using the McMurdo-made cutter holder. We discussed means of getting the chips out and will try tomorrow. After supper we re-bore the pin hole in the rod connecting the Acker drill rods to the augers. Tomorrow we will lower about 50 ft. of augers on the drill rods. The full string of augers had to be pulled up hydraulically at a slow rate. This new way should let us pull them up much faster using the Cathead hoist.

15 December 1968

Today we attempted to remove the 40 ft. of ice chips at the bottom of the hole. We lowered 60 ft. of augers and 130 ft. of drill rods when they got stuck in the hole. We nearly broke the last drill rod connector trying to free the augers. By lowering the tape we discovered the chips were 100 ft. down, or 5 ft. above the augers. I am of the opinion that this is what is blocking the drill. The diesel oil we poured in earlier to cement the chips in a slush so we could pull them out with the augers apparently didn't soak through, as there is 3 ft. of diesel oil above the chips and that is about what we dumped in. I radioed McMurdo for 1200 gal. of antifreeze to dissolve the chips above the augers, but the next helicopter isn't due until Tuesday. This was a bad Sunday.

16 December 1968

I gave John the day off to study rocks, since he will be leaving soon. Mac and Fritz tried to re-open hole M2 without success, and I put fresh Isopropenol in the inclinometer to log any successful holes we drill.

17 December 1968

The antifreeze was flown in by helicopter this morning. We will use it to try to free the augers stuck in our drill hole. A message also came saying that Dr. Lyle Hansen, who is directing the ice-cap drilling program at Byrd Station, will be out this afternoon to look at our problems. The note also said I was to return with the helicopter to McMurdo, as a Plateau Station flight would leave tonight. When I arrived in McMurdo, I learned that the Plateau flight was postponed until tomorrow night. After laundering my clothes, I met Lyle Hansen and spoke to him about our drilling problems. He said either ethylene glycol or isopropyl alcohol can be used as an antifreeze to dissolve ice around our drill augers, but ethylene glycol is best because it is heavier than water and will therefore sink down to dissolve more ice, so that the most concentrated solution is in contact with the ice at the bottom. I wrote these and other instructions on a piece of paper to be read over radio to Meserve Glacier tomorrow in case the helicopter can't take Lyle Hansen himself out there. I was rescheduled to take a plane to the South Pole Station and wait there for the Plateau Station flight tomorrow. The geologists from Texas and Maine were back from Ellsworth Land but I barely had time to say "howdy" to them. By 4:00 PM I was on a shuttle bus from McMurdo to Williams Field, where I had time for supper before the 6:30 PM flight to the South Pole. Just as I was preparing to board the plane, a new plane landed with spare fuel tanks under the wings and equipped for jet-assisted takeoff. I said to the man at the flight desk, "That plane looks like it could fly to Plateau without refueling at Pole." He replied, "That's what it's here for." I quickly wrote a note to Ken Moulton at the USARP office to be sure the Plateau flight stops at Pole tomorrow to pick me up. I told

him about the new plane. Then I was on my way. Mac, a navy man I met, but can't remember where, was on our plane. As we headed south the Transantarctic Mountains fell away to the west, while the Ross Ice Shelf extended to the horizon in the east.

We passed over the huge Beardmore Glacier which Scott climbed to the polar plateau on his race against Amundsen to the South Pole. After almost three hours in the air we landed at the South Pole in bright sunshine. The sun was high in a cloudless sky and the flat horizon of white stretched out in all directions. Most buildings were underground, and I wandered the labyrinthine passages for several minutes before I ran into the USARP Representative. I told him of my fears concerning the Plateau flight not stopping here and he tried unsuccessfully to get more information. In the meantime, Mac, I, and two other sailors went outside and had our pictures taken at the "tourists south pole," a twenty-foot barber pole with orange and black stripes and a metal ball on top, and then we took a snow tractor over to the true South Pole marked by an American flag about 1/4 mile from Pole Station. Back at the station, I learned that apparently the Plateau flight would stop here, so I got a room in the USARP barracks and turned in.

18 December 1968

After breakfast, I read the reporter's story in the *Washington Post*, which he wrote from McMurdo. Some of the Navy people – especially Feeney, the cook – thought he was unfair in describing Pole Station as the most run down of American bases. But I and most others thought his stories were fair and sympathetic. True, some of the beams in the Science Building are twisted by the ice, and many of the floors are warped. Maybe his story will lead to improvements. I wrote several letters, since I wanted friends and relatives to have a letter bearing the South Pole postmark. But I couldn't remember any of the Hughes or Schiltz addresses outside of my own family. It was frustrating. Alex, the USARP Representative, showed me a tunnel with ice crystals all over the walls. From the way he built it up, I thought I'd better get some pictures. But we have better ice crystals in our Meserve Glacier tunnel.

Returning from the tunnel, I stopped in at the ham radio operator's room. Earlier he had asked me if I would like him to establish a phone patch for me in the states so I could talk to someone. He had contacted a Chicago ham operator, and I had him phone Maryhouse and Josie's place. He couldn't get Maryhouse so I couldn't talk to Paw, but he did get Josie, and we made arrangements to talk after 8:00 PM , Christmas Eve and Christmas Day at her home when Paw would be there. She surely was surprised to hear me extend Christmas greetings from the South Pole. The ham operator's room is just in one corner of the radio room, and I asked the radio operator if the Plateau flight had left McMurdo. He said it had been delayed two hours. It was 7:30 PM at the time (1:30 CST) and it won't get here until 11:30 PM. A group of Japanese newsmen are coming out. A Japanese traverse team is going from their base on the coast, to Plateau, and on to the Pole, and then back. I guess the reporters are covering that story. The people here are down on reporters and cameramen – always prying and snooping around. I went into the bar and saw *The Agony and the Ecstasy*. Afterward I had a $0.15 shot of Old Methuselah, a Bourbon whiskey that stopped bottling in 1947. So the bottle was at least 21 years old. It was well named. I spent an hour or so talking with the bartender about drilling, and then at 11:30 PM I went out to meet my plane. It was on time, but went past Pole Station so the Japanese photographers and newsmen could have a look at their traverse party about 14 miles from the pole. Then the plane returned and landed. A half hour later it took off for Plateau after refueling. We passed over the Japanese traverse party who were camped below. With their tents and vehicles they resembled an invading army. I was told the newsmen would come out to them in the morning and escort them to the Pole.

19 December 1968

The flight to Plateau took 2-1/3 hours. We flew over a featureless plain of white visible for hundreds of miles where the sky was clear, and imperceptibly merging into the sky where the sky was

hazy. Low lying clouds seemed to roll like lazy waves over the terrain below, giving it the appearance of geography and contours it never really possessed.

About 3:00 AM we flew over Plateau Station, a cluster of black dots on a bleak plateau of ice and snow. But the landing skis would not lower – despite the pilot's efforts to jar them down by dropping the plane suddenly. We circled for perhaps a half hour before returning to McMurdo, the only place where we could land on wheels, since they have an ice runway on the frozen Ross Sea. The ski problem was solved quickly and a few hours later the same plane left for Byrd Station. While I waited at the Williams Field terminal for the shuttle bus to take me back to McMurdo, I got to talking with a sailor who was also on the abortive Plateau flight. He is stationed at Pole, but flew to McMurdo on the belief that the Plateau flight wouldn't stop at Pole – my own worry – and now it looks as if he will travel over 4000 miles before he reaches Plateau which is less than 700 miles from Pole. He is a diver, and owns a boat and diving and photographic gear in civilian life. After his present term of duty is up, he plans to open up business in Puerto Rico. He has done underwater photography for The National Geographic Society, *True* magazine, and has a Spanish coin he recovered from the ruins of Port Royal, which he wears around his neck for good luck. It is always amazing to me that the most unobtrusive individuals down here with "nothing" jobs often are quite adventurous and enterprising people. But I suppose that is the kind of person who wants to come to Antarctica, so I shouldn't be surprised to find them here.

My Plateau flight has been rescheduled for 8:00 PM tomorrow. The Texans are still here waiting to be flown into Shackleton Glacier in the Transantarctic Mountains about 240 miles from the pole. We compared notes on the USARP personnel who are supposed to support us. We all panned the show. They found Greg Fernette to be particularly annoying with his arrogance and incompetence. John Ricker of USARP told me that the antifreeze succeeded in freeing the augers at Meserve.

20 December 1968

Christmas cards from Paw, Leo, and Tim came today, Leo's letter was a shock as he told me Naomi had a malignancy in the uterus. She wrote Paw and now he is all upset. John Gunner came back from Meserve today. He will fly to ChiChi on the 24th. Now only Fritz and Mac are out there. I wrote them telling them that they must get the antifreeze bailed out of the hole at G4 before it is so diluted by water it freezes. John Gunner said they thought about it but couldn't think of any way. But I thought of a tin-can arrangement that can bail the hole out. Unfortunately my letter won't get there until the 24th, weather permitting, and the hole may be frozen by then. The Texans are taking my plane to Shackleton Glacier tonight, and my Plateau flight is postponed again. I asked John Gunner if he wants to fly out to Plateau with me, since he could be back at McMurdo before the Dec. 24th flight to ChiChi. He wants to, naturally. Tonight they showed the movie *Cast a Giant Shadow*. Now I know why morale in the Israel army is so high. They have girls in it who run around in short shorts.

21 December 1968

This morning I went up to the USARP Chalet and asked John Ricker if John Gunner could fly out to Plateau with me. He said, "No, because he might miss his ChiChi flight." A few minutes later John Gunner came in, and I told him what Ricker said. He tried to plead with Ricker, but Ricker said, "I'm not going to discuss it." Gunner said, "But what possible reason could you have?" I told Gunner, "He doesn't have a reason, that's why he won't discuss it." We both tried to prevail on Ricker, but it was like talking to a fence post. I have gone out of my way to be helpful to Ricker and the others. I volunteered for all his little pet projects. Now when I ask a favor this is the answer! "I've heard requests like this so often it doesn't bother me anymore." "The VIPs get to go on these flights because they give us money. You don't have any business out at Plateau." These were the things Ricker told Gunner by way of argument. Then he shut up altogether.

We left for Plateau about 2:00 PM, and after an uneventful trip, we landed about 7:00 PM. The plane was loaded in less than an hour and used JATO (Jet Assisted Take Off) bottles to get off the runway. But the load in the rear was too light so they landed and took on more cargo in the rear. I climbed a 100 ft. tower to get a shot of the JATO takeoff with my last color shot. I almost froze up there before it left; I hope the picture is worth the suffering. Plateau Station is 11,890 ft. above sea level, has a population of 8, an average temperature of –69.9°F, a minimum of –123.1°F, and a maximum of –2.8°F.

22 December 1968

Today I set up my equipment in Scott Kane's geothermal heat borehole. The calibration of both temperature probes was successful, but when I lowered the probes into the borehole, they both were shorted out. I repaired probe T2 and it worked well in the hole, but probe T1 would work outside the hole and then conked out in the hole. I repaired it several times, and by 2:00 AM the following morning I lowered it in the hole and it worked.

23 December 1968

At 7:00 AM I checked probes T1 and T2. Probe T2 was still working but T1 was shorted out again. I pulled it up and could find no bad connections. Then suddenly it worked again. Maybe the temperature at the bottom of the hole (70 meters and about –60°C) caused the wire to contract thereby breaking a contact. I lowered it 15 meters from the top of the hole. It still was working. But at 2:00 PM when I went out to shut off the instrument while the mechanic was working on the electric power generator, I noticed T1 wasn't working. T2 still functioned. They have been having trouble with these generators all year. It all began on February 29, just as the Antarctic winter had begun. Both generators quit. They radioed McMurdo who kept promising a flight. Finally about March 3rd they said they couldn't send a plane. Temperatures fell to over 100 below zero, and no plane can operate in such conditions. They brought over the generator from the summer camp, and after much difficulty they got it installed. In the process the doctor got a severe cut across the forehead and had to sew himself up. He couldn't finish and one of the others had to finish the stitching. One man succumbed for 2-1/2 hours due to carbon monoxide poisoning. A few days later the garage burned up and threatened to spread flames to much of the base. All this happened just as winter began, and with no hope of outside help for eight months. They had trouble with the generators all winter. It was touch-and-go time after time.

24 December 1968

Christmas Eve at Plateau Station. I marked meter intervals on T2, and I left T1 out of the hole to record temperatures in the Jamesway, which range from –18°C to –26°C, during 24 hours as the sun turns in the sky, dipping to the northwest to give the coldest temperatures here when temperature would be warmest at McMurdo on the other side of the Pole.

As midnight approached I wrote Christmas cards. We were all sitting around talking and waiting for Christmas Day. I read them Jim Patraw's letter describing John Wayne's appearance on Bob Hope's TV special. "Dirty Ron" Russell, the corpsman who does diving in Puerto Rico said that when John Wayne toured the army bases in Vietnam he was a real morale booster. He said the other movie stars (including Joey Heatherton) began to draw a few soldiers one or two hours before their appearance. But when John Wayne came the place was packed by 6:00 AM even though he wasn't to appear until 2:00 PM. He said all he did was tell dirty stories and "shoot the shit" but soldiers came hundreds of miles to hear him.

Just before midnight I put on my red parka and went outside to take a temperature reading. When I came back I broke up the boys by blowing in shouting "Merry Christmas! Ho! Ho! Ho! Merry

Christmas!”

25 December 1968

We played RISK from midnight until almost noon. It is a game where each player tries to conquer the world. When we quit I had twice as many armies as the other players, but victory was not in sight. We had a tremendous Christmas dinner – turkey, beef, lobsters, several vegetables, pudding, cake, appetizers, etc, etc, etc. At 2:00 PM it was 8:00 PM Christmas Eve in Pierre, South Dakota, and I called Josie’s apartment via the ham radio network. By prearrangement from my South Pole call, she had Paw there. Radio conditions were fair, and we were able to exchange Christmas greetings and bits of news.

26 December 1968

A Hercules LC-130 landed at 5:30 PM, just as I was completing my temperature log of the borehole. Had I until midnight I could have gotten the temperature at the very bottom also, but I have enough data. After the plane was loaded it couldn’t take off even with JATO bottles. We moved the load farther to the back and then it took off. We landed at the South Pole to pick up the Japanese newsmen covering the Japanese traverse party, and took on more cargo. Flying in to McMurdo, we got a fine panorama of the Transantarctic Mountains. The Japs were all over with their cameras and finally had to be run out of the pilot’s cabin.

27 December 1968

We arrived at McMurdo at 1:30 AM. I showered and laundered, so it was 3:00 AM before I went to bed. At 7:00 AM I was up, ate breakfast, and arranged to join an 8:00 AM helicopter flight to Meserve Glacier, but the flight was postponed until 1:00 PM. We actually took off at 8:00, but the engine was faulty and the pilot quickly returned. In fact he landed so fast, it seemed as if the helicopter dropped onto the pad. I mailed the geothermal borehole temperature data I took at Plateau to Scott Kane, and learned that the drill rig was at the G3 site when Meserve Hut radioed in. Bob Behling is here and I was added to his flight to Meserve. We finally left at 1:00 PM. A Mr. Pembroke Hart, who is a secretary for the National Academy of Sciences and something of a glaciologist, flew out with us. I showed him around while the helicopter took Behling and Paul Mayewski out after more of their equipment. After Mr. Hart left, I compared the core barrel cutter holder I had made at McMurdo with the factory-made one Behling brought down, I think mine is better. Just as I was preparing to go up to the drilling site, Fritz and Mac came down and filled me in on the progress. They had gone down 100 feet on hole G3.

28 December 1968

This morning we discovered that melt water had frozen the augers in hole G3. We spent all day and until 4:00 AM the next morning getting them out. About 3:00 PM we got the augers to move slightly but water was pouring in faster than we could dig, and the augers re-froze. We stopped until about midnight when we hoped melting would stop.

We began re-digging the pit at G3 to retrieve the augers, and by 4:00 PM we got them out – all but the last four sections (20 feet) and the bit. They are still 80 feet down. No connecting pin.

29 December 1968

Today we moved the drill rig over a few feet and tried to drill a new hole at site G3 using the other auger bit. However it wasn’t made for these augers and we were unsuccessful in modifying it to bore a hole the same diameter as the augers. Then we tried to use the SIPRE core barrel using the factory-made cutters and holder. We tried to core the second hole at G3 and found that the core barrel jammed

just as it did before. In fact the factory-made parts are almost identical with the parts Fritz had the McMurdo machine shop make.

30 December 1968

Today Mac went surveying because the wind was low. Fritz and I tried using the cutters and holder I designed and the factory job with washers under the cutters to raise them. Both succeeded in filling the barrel, but only three feet of depth was obtained per drop using mine, and 2 feet using the factory job. Neither case gave usable core – the core was jammed in and had to be chipped out of the barrel. My cutters wore down much too fast. We then switched over to the augers even though the other bit cut a hole twice as big in area as the augers. All told, with both augers and the core barrel we got down 36 feet before we could no longer advance.

31 December 1968

After re-mounting the base of the ladder on the ice cliff, we took the day off since it was New Year's Eve. I have decided to try to dig out the augers and use the pit to obtain ice cores, temperature data, and to set up strain gauges for determining the magnitude and direction of ice flow. It is probably a fool's errand but I can't see what else to do. Parker, Paul, Bob Behling, and Murphy are here. Fritz, Parker, Bob Behling, and I played Hearts until New Year's. Then we turned on the radio and Parker played *Auld Lang Syne* on his harmonica to all.

1 January 1969

New Year's Day, and I hope things improve. Paul and Mac were successful in testing Parker's seismic recorder on the ice at site G4. Fritz and I tried to clear out the ice chips in the pit at site G3. Fritz got soaked from melt water and we came down so he could change clothes. We prepared a 55-gallon drum for hauling ice chips out of the hole, to be raised by the drill rig. Everyone seems to have a defeatist attitude and it is hard to get a full day's work out of them.

2 January 1969

Fritz and I dug down a good 12 feet in the pit today, but Mac is sulking again. Parker and Bob were to be flown out today to Bull Pass. But bad weather socked in and the helicopter didn't come. They waited around until 1 PM or 2 PM in the Jamesway and then went out in the field. They returned just before 11:00 PM and told me that Mac laid around in the Jamesway reading until 1 PM or 2 PM while Fritz and I were breaking our asses in that pit. He went out presumably to install strain net stakes over the wave train (that is what I told him to do this morning, since he is afraid to go down into the pit). But he was back in the Jamesway sleeping when Fritz and I returned at 5:00 PM. Parker told me that he has sulked before. When Parker and Paul came to Meserve before I came out myself (this would be early November), Parker and Mac and Fritz were hardly speaking, presumably because Fritz wouldn't help with the dishes, or so Mac told Parker. Mac also told Parker he was tired doing Gerry Holdsworth's thesis. This is hogwash, as this project is Mac's thesis if he wants it. And the data we get out of the pit will be his data. We are digging the pit in the first place to recover the augers he lost when he forgot to put the pin in which connects the augers together.

3 January 1968

This morning I had a talk with Mac. Yesterday he said he was writing letters requesting a photo flight over the glacier to show the wave patterns. It is a good idea, but I notice he is the last to leave for work in the morning and the first to return in the evening, when he is off working alone. Well, it's his thesis not mine. The helicopter came today to take Parker, Paul, and Bob into the field. It also brought in

another drill bit which I requested, so we can stop digging the pit. My camera came back. It cost $22.50 to get repaired. Don Sanborn of the Civil Air Patrol is here.

4 January 1969

I was up at 6:00 AM and by 7:30 AM we were on the ice drilling another hole at the G3 site. By noon we were down 84 ft and hit the drill augers, which were lost 80 ft down. Our hole must have angled over to the first hole, or vice versa. We prepared a new drilling hole further away. Damn! Won't we ever get some good luck!!

5 January 1969

Today Fritz and I finally succeeded in drilling a hole at the G3 site. We used all the augers and went down 205 ft without hitting bottom. We could attach drill rods to the augers and go down some more, but that risks getting the augers stuck again and we don't have any more time to fool around. So I think I will let Bull make that decision when he comes down in two days.

6 January 1969

Mac and I tromped over the glacier today and decided that the next hole should be on a wave terrace below G4 instead of at the G2 site. A possible shear plane may be operating on that wave and we can hit bottom with the augers from there. I doubt if we could from G2, which is much higher up where the ice is thicker. I had planned to start on a platform at the lower site but my crew disappeared. They are out "exploring." Two of them leave tomorrow and this is their last chance to rubberneck. A Kiwi geologist paid us a call today. He walked up from Lake Vanda, which is 8 hours up and 5 hours back – or so he said.

7 January 1969

The helicopter came in the morning bringing Bull and Nye. I gave them a rundown on our progress – or lack of it. Then we dug a platform at a new drilling site below G4 and showed Nye the interesting aspects of the glacier. Fritz, Murphy, and the Civil Air Patrol hombre left by helo.

8 January 1969

This morning Fritz and I moved the platform, etc, down to the new drilling site. I said, "Let's take down the tripod derrick." He said it was heavy and that he wouldn't help me. So I carried it down alone. Nye made a string of bailing cans for dipping the antifreeze out of the holes. He certainly is not afraid to do what he can to help us, although he is a famous glacier theoretician and some might think common work would be beneath him. The helicopter moved the drill rig and augers down to the new drilling site. It brought out a visitor but we were so busy, nobody talked to him and he left without seeing anything. We dug a five foot pit to begin the new drill hole, and Bull helped. He was nearly exhausted when we finished. He said it was the first manual labor he had done for 5 months. He is the director of the institute.

9 January 1969

Today we finally succeeded in drilling a hole to the bottom without mishaps. An unprecedented event! It is the last hole we will drill. Bull went to Lake Vanda for a dedication ceremony. Nye has made bailing cans for getting out ice chips from the drilled holes, once they have been dissolved by ethylene glycol. He also put 5 meter markers on the coaxial cable of the temperature probes. He is very eager to be helpful, which surprised me since he is such a famous scientist.

10 January 1969

Today I began measuring temperatures in hole G3. Nye calculated that we should have temperatures within a hundredth of a degree after two hours at each depth in the hole. He did it from an equilibrium temperature run.

Bull came back from Lake Vanda with an Italian geologist named Marcello. He said everyone got blind, staggering drunk at the ceremonies there. He also saw the tooth marks on the table, which another Italian lifted with his teeth. We had heard about that feat, and Bull saw the proof. That fellow is also a former world's champion ski jumper. Physically he looks something like me, I'm told. But the resemblance ends there!

11 January 1969

All day I took temperatures down the G3 borehole. The main thing I learned is that the probes must be recalibrated since they differed by 0.2°C when both were 40 meters down. It was one of the windiest days of the season up on the ice. I saw a big box blow away from the G4 site. Nye collected ice samples from the cliff on the glacier; the minerals scraped off the rocks at the floor of the glacier are apparently moving up the glacier, and we want to know if they are diffusing through the ice or if the ice is moving upward like the air bubbles in the ice seem to be.

12 January 1969

This morning we talked over the means of measuring the deformation of the waves on the glacier. I suggested cutting a staircase in the wave front and mounting pegs beside each stair and measuring distances and angles between the pegs to get the strain components. That is what we finally agreed on, and Mac and Bull did the cutting. Nye and I calibrated the temperature probes and found that the new calibration improved my data in the G3 hole. After supper Mac and I bailed the glycol-dissolved ice chips out of hole G3. A helicopter brought in the glycol today but didn't land by the cabin.

13 January 1969

At 1:00 AM this morning Mac and I had bailed all the ice chips out of hole G3. I did most of the work, Mac wasn't strong enough for it.

Bull, Paul, and Bob left by helicopter this morning to do some geology elsewhere in the valley. In the afternoon I finished logging G3 for temperatures, but right away our bad luck returned. I lost one temperature probe down the hole when the cable broke. Down below, melt water had almost gotten into our last hole. It looked like it would be another one of "those days." But nothing else happened. I drained off the melt water, and Mac and I bailed out the hole. We finished by 7:30 PM. One more hole to go – at G4 site. It has 100 ft of chips in it and will be the worst one. We used the tripod and pulley for bailing out today's hole, and it was much less work. I think we will also use the tripod on G4.

14 January 1969

Our bad luck is continuing. This morning I tried unsuccessfully to fish the lost temperature probe out of hole G3. Mac and Nye gave up on the surveying attempt because of the cold and wind. Mac and I tried to measure the inclination of hole G3 later in the evening but had trouble getting the inclinometer to function properly. A large bubble appeared in the fluid.

15 January 1969

Mac developed the inclinometer film this morning, and the bubble in the damping fluid obscured the pictures. We spent most of the morning and afternoon trying to understand why the inclinometer didn't function but were unsuccessful. It works OK until we lower it in the hole. Later in the day Bull came back with a couple of geologists from the Univ. of Wisconsin. They helped us move the tripod of the drill rig up to the G4 hole, which we will use in bailing out the chips by dumping in antifreeze. Mac and I again tried unsuccessfully to use the inclinometer in the G3 hole. No bubble formed but the fluid leaked out and the meter didn't run properly. I lowered the T2 temperature probe in the hope that it will give a reliable reading at the bottom of the hole. The last attempt failed.

After supper Mac and one of the Wisconsin geologists attempted a flute duet. They were about as successful as our experiments. The two geologists left about 9:30 PM because a helicopter will evacuate them at their campsite in the morning. One day in and out the next day – that is the way to do research down here!

16 January 1969

Mac and Nye surveyed until about 4:30 AM. Later on I went up to log the temperature at 61 meters in the G3 borehole and prepare to bail out the G4 borehole. Bull came up about an hour later to help with the bailing, but after 1-1/2 hours so many wires were breaking on the bailing line that we gave it up. I spent the rest of the day making a bailing line out of cable.

17 January 1969

Today Bull and I finished bailing out the G4 borehole. Mac came up to check his met station when I was up logging a temperature in G3. Bull asked Mac to help him bail. He didn't volunteer. The temperature data in G4 is now complete and reliable. After supper Mac and I logged G3 for inclination. He developed the film while I bathed and laundered. The film was good, so work on the G3 borehole is completed. Nye left by helicopter for Lake Vanda this morning.

18 January 1969

Bull left for Wright Upper Glacier by helicopter this morning. I began to log borehole G4 for temperatures after Mac and I measured the inclination. The inclinometer film was good so in the afternoon Mac and I logged the remaining borehole for inclination. While up on the glacier I saw a blizzard had settled over the region of Wright Upper Glacier. Bull, Nye, Behling, and Mayewski must be caught in it. Mac went out to finish his surveying this evening about 11:30 PM and I continued measuring temperature in borehole G4.

19 January 1969

Today I completed the temperature measurements in G4 and moved down to the final borehole which I will call G5. I had just finished setting things up, and was returning to the hut about 5:30 PM when I saw Nye coming out of the hut. Mac had walked up to Lake Vanda and returned with Nye, as I suspected. He didn't finish the surveying. Nye said he and Bull didn't stay long at Wright Upper Glacier as the helicopter pilot didn't like the way the weather was developing. So Bull got his ice samples in the midst of the local blizzard generated by the helicopter blades, and they all left without the sample from the volcanic cone Bull wanted. He stayed with Behling and Mayewski instead of returning with Nye.

20 January 1969

Today I took temperatures in hole G5 while Nye and Mac tried to finish the surveying. They finally did just as the first snowfall of the year – of the season even – came in from the coast. It covered

everything, and on the way back from a temperature measurement I almost walked off the ice cliff at the edge of the glacier. The snow made the ice indistinguishable from the rocks 80 feet below, and I was walking along concentrating on where to put the next foot, when I glanced up and saw the precipice just a few feet ahead of me. When I got back to the cabin, I discovered that Bull, Behling, and Mayewski had arrived on foot from Lake Vanda. Their camp is still there because the helicopters didn't fly today.

21 January 1969

Today we succeeded in completing all but a few odds and ends of the work remaining. The valley was a winter wonderland without any wind – which is very unusual – so we were able to finish the strain net measurements, and the leveling. I also logged the final temperatures in G5. After supper we speculated on how and why the seals come up the Valley from the Ross Sea. They have to hump over a piedmont glacier at the head of the valley, and there is nothing here to attract them. Yet there are hundreds of dead seals in this valley and the neighboring ones. I thought it was the Seal's Graveyard – equivalent to the Elephant's Graveyard. But Bull says they are just rebelling from parental authority. The sky was overcast today, and this evening the sun sent shafts of light through the cloud blanket in the west, so that the valley at that end was incredibly beautiful. The River Onyx became a silver thread weaving to Lake Vanda. An early explorer had named the valley The Grand Canyon of the Antarctic, because of the resemblance in size and sculptured magnificence. But "the committee" decided to name it after a British scientist named Wright instead.

Amazing as it seems, we have finally succeeded in accomplishing the research goals we set for ourselves. In spite of all the frustration and setbacks, perseverance has triumphed!

22 January 1969

Today we broke the back of Meserve Glacier. I finished the top temperature profile in G4 hole, and we finished re-drilling and measuring the remaining strain nets on the ice. Then we began to take equipment off the ice and pack. Mac and I won't leave until the 25th. Bob and Paul leave tomorrow, and Nye and Bull had said they would leave with us. But Nye especially was showing signs of collapse. He was very active in the days just after he arrived, but lately he wasn't even much inclined to leave the Jamesway. Bull was very active in the two weeks he was here, but he helped my crew only three full days, all put together, the rest of the time he was off with Bob and Paul to other parts of the valley studying glacial moraines, etc. He was sleeping in the survival tent late this afternoon, which is near the Jamesway and is a safety tent in case the Jamesway burns down. A helicopter approached, and he came running out of the tent packed – bags in hand. "That is a welcome sound!" he said as he charged past me on the way to the helicopter pad. On Nye's trip to Lake Vanda he told Bob that if he didn't get out of Antarctica by the 28th, he would be "livid." He made sure he got on this helicopter.

It took Paul up to their Lake Vanda camp so the campsite could be evacuated. I went along to help, but mostly for the ride. When we returned, the sliding door on the helicopter was no sooner opened than Nye and Bull made their headlong charge. Nye came at the helicopter a'hissin' an' a'pissin' and a'snortin' and a'fartin'. Bull was a one-man flying wedge. But the funniest part was when they reached the door. Then all of a sudden they were proper Englishmen again, and it was, "After you John." No, no, Colin, after you, please." It was a riot! These grown men acting like greedy kids running after a lollipop until they had their grip on the door – their ticket out in their hand – then and only then did the amenities of civilization return. I wonder what would have happened if the helicopter could only have evacuated one of them. Bull would probably have aimed a karate chop to Nye's bad back (he wears a corset for support), and Nye would probably have slammed the door on Bull's fingers. Bull had been in Wright Valley many times and has named most of the features here. (Not in my journal, but names include Bull Pass, Bull Pond, etc.), so one might think he would feel at home here. But when the helicopter -- which

was not scheduled to evacuate anyone – droned overhead, his eyes glazed and he began stalking about like a caged animal. When he finally made his mad dash to freedom and the cloud of dust had settled, we discovered that he left his shoes and pants behind. They belong to Uncle Sam, but if he tried to make Bull come back for them, he would have to load Bull back into the helicopter in a straightjacket. (Not in my journal, but upon re-telling this story over the years, I have called this the Bull-Nye Syndrome. When it was time for me to leave, I experienced the Syndrome myself. You don't want to miss The Last Train From Gun Hill.)

23 January 1969

Bob and Paul are still here. Bad weather kept the helicopters down. Mac and I tied down the drill rig up on the glacier, and piled up the other stuff up there for storage or for shipment to McMurdo. Paul was making jokes about Bull and Nye yesterday but he was twitching and pacing today waiting for his ride out. And he threw quite a tantrum when he learned over the radio that no helicopter would come.

24 January 1969

This morning a helicopter evacuated Bob, Paul, and their gear. This afternoon a helicopter evacuated our loads on the ice, and we took the last bit of measurements up there. Mac left the hand core auger in a hole and it got frozen in. Someday, he might learn. At my suggestion he poured in some antifreeze and got it out. After supper we packed most of our gear and equipment for evacuation tomorrow.

25 January 1969

The helicopter which was scheduled for 1:00 PM came about 9:30 AM, so we hurriedly cleaned up the cabin, took down our radio antenna, loaded our stuff, and kissed Meserve Glacier farewell. There were some vibrations in the helicopter, but we arrived at McMurdo safely. I showered and laundered immediately, and then we packed our equipment that will be shipped by boat to the states. I wanted to take a boat to New Zealand, but none are leaving for two weeks. Only one icebreaker is here at the moment. This evening the USARPs threw a party for the helicopter pilots and crews, and I learned that they had pet names for various characters in the field parties that they supplied during the season. Paul Mayewski was "Killer" because with his black beard and sunglasses he looked like a homicidal-type in John Wayne war movies. Mac was "The Hippie" because of his long hair and bedraggled appearance, I was "Max Cargo" because of my bulk; "Max" being their abbreviation for "maximum." A crewman named Sullivan was telling us all this. He said that when I would go into the Wright Valley with my two assistants the word among the helicopter crews was, "We're taking out two passengers and Max Cargo."

26 January 1969

Some more big shots are down here again. Phil Smith, the number two honcho in the Antarctic division of the N.S.F.; the chairman of the board at IBM, a cat named Watson, a former chairman of the New York Stock Exchange, now a director of Olin Matheson; Peter Snell, the Australian 4-minute miler; a couple of members of the New Zealand Parliament; and some reporters – one from Yugoslavia. At dinner I was telling one of the reporters that anyone who was a former this or former that must be over the hill. The former stock exchange big shot was at the next table and the reporter shushed me and said he "resigned" under fire. After dinner I ran into "Red" and "Frosty" who are back from Plateau. We went up to Observation Hill, down to look at the seals (Red fell into McMurdo Sound through the ice), and over to see the dogs at Scott Base. It is the only place on the continent that still uses dog sleds. I ran into Paul, Bob, Mac, Marcello, the other Hughes that visited Meserve, and several other familiar faces over there. (Not in my journal: Red and Frosty had wintered over at Plateau Station when the generator conked out

after the fire. It wouldn't start in the cold, so they piled wood around it and lit the wood to warm it up. Then it started, but never sounded good, so they never got a good night's sleep all winter. If it stopped, they died. They looked shell-shocked when I met them at Plateau Station, and they still looked shell-shocked when they arrived at McMurdo).

Rumors were spreading that our plane for New Zealand leaves tonight, so on the walk back to McMurdo I checked at the USARP office. It leaves at 8:00 AM tomorrow. We will head for Williams Field at 7:00 AM. I've seen the White Continent. I won't be sorry to leave. On the walk back to McMurdo, I was accompanied by a Texan from San Antonio. He said that at the Christmas Party Capt. Kelley came in and said to him, "Speak of the devil! Not that all USARPs are bad; I just haven't seen one yet who could cut it!" Good old Capt. Kelley.

27 January l969

My last day in Antarctica. We left for Williams Field after breakfast for a 9:00 AM flight. At the ice runway, the Connie was being loaded but we didn't leave until l0:00 AM. I met the tough Italian who lifts tables with his teeth and throws 500-pound barrels onto the back of trucks. Marcello introduced me to him. I must admit he did look pretty tough. Four men were rolling a big wooden box along the bed of a big truck. Apparently it was full of rocks the Italian geologists had collected. When they got it to the back end of the truck, the tough Italian (who couldn't speak English, but is one of the world's greatest mountain climbers) motioned them to set the box on his shoulders. He then carried it—alone—to the airplane. Impressive. Very impressive. I thanked Marcello for the Italian Alpine Club badges he gave us, and I pinned mine on the side of my Stetson. When the plane took off there was a great rattling of bolts and vibrating of panels and pipes, and we were glad when the plane passed the point of no return— after that it was Chi Chi or bust. After a 9 1/2 hour flight we landed in Chi Chi, to be greeted by the first trees we had seen in 3 1/2 months. It had been raining, but that didn't dampen our spirits. After checking in my USARP equipment, we went downtown where we were booked at Warner's Hotel. I roomed with one of the kids from the University of South Dakota at Vermillion, and the rest of the Vermillion crowd and I ate supper together. We got no rest on the plane so I turned in early.

The Bull – Nye Syndrome

The tough Italian was Carlo Mori. He had a fierce face and a square jaw. When I went to Vanda Station on the helicopter, while Bull and Nye champed at the bit back at Meserve Glacier, the Kiwis showed me Mori's teeth marks on the edge of a table that he had lifted by squatting down, biting down on the edge, and then standing up with the table clamped in his teeth and at eye-level. Mori had returned to McMurdo by then.

It occurred to me afterward that a name should be attached to the anxiety of Colin Bull and John Nye to get out, no matter how undignified the escape. When the helicopter first approached from McMurdo, they were standing in the middle of the circle of painted stones where it landed. I had to shoo them out, which was embarrassing because one was my boss and the other was the founder of my new profession. That part of Antarctica should have been like a second home to them. After all, Bull had named most of the geographical features in the Dry Valleys (Bull Pass, Bull Pond, etc.) and Nye, the Father of Modern Glaciology, was cheek-by-jowl alongside the largest ice sheet on the planet. Now, in their mad rush to get to the helicopter after its return from Vanda Station because they thought it had room for only one of them, I got the distinct impression that, with their arms flailing like the Scottish runner, Eric Liddel, in the movie, *Chariots of Fire*, Bull was aiming karate chops at Nye's bad back and Nye was trying to elbow Bull into the tail rotor of the helicopter. Of course, this could have been just a figment of my imagination. They had left their big orange USARP bags at the edge of the circle of painted stones, and they scooped them up without breaking stride as they charged the helicopter. The

crewman had thrown open the sliding door, and they were nose to nose when they made their leap with their bags. They got stuck in the doorway, where they wiggled and squirmed until the pilot said he had room for both. Then they exchanged pleasantries, resumed struggling, finally popped through, and away they went. I thought it was very funny at the time, but a few days later when it was my turn to leave, it was a good thing that nobody tried to block my way to the helicopter. When a job in a remote location is done, and the logistics for evacuation are problematic, people want out fast, and to hell with the scenery. Since I was also affected, I decided this was a general phenomenon and I called it the Bull-Nye Syndrome.

The most advanced case of Bull-Nye Syndrome I saw was on display when the Hercules LC-l30 arrived at Plateau Station and I saw the eight men who had wintered over there. As I recall, it was the first flight after nine months in total isolation. All eight charged the Herc after it landed, and they all had the form of insomnia known as the Antarctic Big Eye, but two in particular looked like wild men. They were called "Red" and "Frosty". When the main generator broke down, they had to get the smaller generator from a hut about 100 meters from the main buildings. To move it over that distance, they first had to turn it off with no guarantee that they could start it again. The Antarctic winter was rapidly approaching, when temperatures at Plateau Station were usually over 100 degrees below zero, and no airplanes could fly in to rescue them. All eight men loaded it onto a Nansen sled and they began pushing and pulling it back to the main buildings. The doctor fell and gashed his forehead on the generator, so he was unconscious and only seven were able to move the sled. When they finally got it to the main buildings, it started grudgingly and they always had to be close by to nurse it so it would keep going. When the garage burned down, the generator stopped and wouldn't start. With no chance of evacuation, they piled unburned wood around the generator, poured gasoline on the wood, and lit a fire in the hope it would warm the generator enough so they could start it again. It did start, but all during the six-month Antarctic winter it would go put-put-put----put------put-put---put--------put--------put-put---put-put-put------put-put-put-put-put-put-put-put-put---put-put-put---put-put-put-put----put-putput. Nobody could sleep.

I ran into Red and Frosty when I was in Chi Chi. They were staying at the White Heron, the classy hotel in Christchurch. They were sitting on the steps outside. They still had that wild look and the wide unblinking eyes they had when they rushed the Hercules LC-l30, after it landed at Plateau Station a few days before Christmas. I expect in their heads they were still hearing "put-put-put---put-------put-put-----put--------put-put-put-put-put---put". Maybe they always will.

The Brains of the Big Four

John Nye was still at the Warner Hotel when I arrived in Chi Chi. I really enjoyed our many discussions about glaciology while we lived together at Cliffside Camp, the name Gerry Holdsworth had given to the Jamesway at Meserve Glacier (he must have gotten that name out of *Boys' Life*, the Boy Scouts magazine). Even more fun was sharing thoughts about other glaciologists, since I was new in the profession and had met most of the Heavy Hitters during the ISAGE symposium at CRREL. We were both enchanted by Petr Shumsky's reply, "I don't deal with statistics. I deal with facts," to the question after his ISAGE talk if he had made a statistical analysis of his data. I had told Nye that I considered him, Hans Weertman, Professor Lliboutry, and Petr Shumsky to be the Big Four of modern glaciology.

Most of my stories dealt with Hans Weertman, since I had taken his courses, and known him for eight years at Northwestern. One in particular amused Nye. Weertman didn't teach any courses in glaciology at Northwestern, but he taught dislocation theory, which describes how crystalline materials like ice deform under stress. Hans had gone through some derivation in his advanced dislocations course that eluded me in class, so I went to his office afterward for enlightenment. Hans was sitting at his desk

working on some theoretical paper when I came in. Hans Weertman had a boyish face that wore a perennial mischievous grin. He turned to me grinning. I said I could come back later if he was busy but he said, “No, no, that’s okay.” So I stammered through what had confused me, and he listened attentively, but all the while I had the uncanny impression that he was still working on his paper too. Finally, Hans interrupted me with a question that turned on the lightbulb for me. I thanked him and, as I was walking out, he turned back to his desk and resumed writing at precisely where he stopped when I came in. He was still thinking about his paper while I was blithering. The only explanation, I decided, was that Weertman had mastered the ability to separate activities in the two hemispheres of his brain, so he really could listen to me with one hemisphere and work on his paper with the other, both at the same time.

After one such Weertman story, Nye volunteered, “You’re quite fascinated with Hans, aren’t you?” I said, “I suppose I am, but what really fascinates me is wondering what’s behind that grin he always wears on all occasions under all circumstances.” Nye said, “I know what you mean. Hans was delivering a version of his glacier sliding theory at a conference a few years ago and, after his talk, I stood up and asked (if you knew Nye, you could just hear him saying this), ‘That was most interesting, Professor Weertman. But let us suppose that instead of your assumptions, A, B, C, and D, we made assumptions E, F, G, and H. Then would not the conclusions be I, J, K, and L, instead of your conclusions M, N, O, and P?’ Hans just stood there at the podium, grinning, but saying nothing. So I said, ‘Perhaps if I rephrased my question…’ Then I went through the whole thing again, but at the end Hans was still grinning and saying nothing. Finally, I said, ‘Well, won’t you at least concede the possibility that there is some merit in what I am suggesting?’ Weertman replied, ‘Anything’s possible.’ and kept grinning.” I asked Nye, “What did you do next?” He said, “What else could I do? I sat down.”

One time when we were discussing Professor Lliboutry, I called Nye’s attention to the unusual shape of Professor Lliboutry’s bald head. “Did you notice that there is a cranial dip at the top of Professor Lliboutry’s skull, so that his brain has a frontal lobe and an anterior lobe that seem to be separated? If he has mastered Weertman’s ability to conduct separate research in the right and left hemispheres of his brain, as well as with his frontal and anterior lobes, then the possibility exists that Professor Lliboutry can work on four theories at once. That could account for his genius.” Nye agreed.

“The real genius, though, is Shumsky,” I said. “He doesn’t even need a brain. All he needs are facts.” And that’s how it went, day after day.

Captain Kelley’s Piss Glacier

Navy personnel at McMurdo, along with United States Antarctic Research Program (USARP) scientists and their crew members, lived in Jamesways like the one at Meserve Glacier. When I and my crew were at McMurdo, we were put in Vermin Villa. It was for scientists and field assistants at the bottom of the totem pole, meaning first-timers. Veteran scientists and their crews stayed in The Green Goober, which was better housing. The USARP big shots from the National Science Foundation stayed in the Purple Palace. It had flush toilets and was a building, not a Jamesway. The Jamesways had a funnel inside that went through the wall to a 55 gallon barrel outside. That was the urinal. Captain Kelley, the Navy Commander at McMurdo, had his own Jamesway. His barrel had overflowed and, by the end of my field season, a yellow “piss glacier” had spilled over the side and had advanced across one of the streets at McMurdo. On one occasion, Captain Kelley appeared at a party with a toilet seat around his neck. On another occasion, when I was in the chow line at McMurdo, I heard Captain Kelley’s voice behind me yelling “Gangway!” as he pushed through to the front of the line. Someone asked, “What does that mean?” He yelled back, “It means get out of my way! It also means I run this show!” Rank has its privileges.

Max Cargo

Since I was low man on the totem pole, I had to wait 25 days at McMurdo before my crew and I were flown out to Meserve Glacier. During that time, I went to the chow hall for breakfast, lunch, dinner, and supper, the four meals between the round-the-clock day, swing, and graveyard shifts of Navy workers (8 AM to 4 PM, 4 PM to midnight, and midnight to 8 AM). When our day finally arrived, we and our field gear were weighed before we were allowed to enter the helicopter. I was over 300 pounds. When we got into the Sikorsky helicopter, it wouldn't take off. The pilot turned toward us and said, looking right at me, "One of you will have to get out." I got out and away it went. After that, every time I returned to McMurdo, I would overhear the helicopter pilots and crewmen refer to someone they called Max Cargo. I thought he was a cartoon character. Only at the end of our field season did I discover that I was Max Cargo.

I didn't fly from Chi Chi (Christchurch) back to the States with the others in my crew. I had told Colin Bull that I would like to see some of New Zealand, visit Australia, and return overland by way of southern Asia, since I was already halfway around the world. I said, "I enjoyed our field season and I would like to stay in glaciology, but you can fire me and hire someone else for my job if you think I'm asking for too much. I'll understand and there will be no hard feelings on my part." I packed our temperature probes, the inclinometer, my field books, and data from the boreholes through Meserve Glacier for shipment back to Ohio State, after we had developed the film from the inclinometer to make sure that the inclination and bearing were visible on the snapshots at various depths down the boreholes. The temperature and inclination data were published by NSF in the *Antarctic Journal of the United States* (July-August 1971, pages 127-128). Measuring bending of the boreholes caused by the flow of ice required re-logging the boreholes for inclination. I did that two years later, and sent the photographs to Gerry Holdsworth, who was working in Canada by then. Our data were available for Mac to use in a doctoral dissertation of his own, but two years before re-measuring borehole inclinations was too long for Mac. Fortunately, he had identified another research project during our Antarctic field season and he returned to Antarctica to earn his doctorate on that study.

Photos for Chapter 5: Antarctic Journal

Photos are numbered from left to right and from top to bottom.

1. I drew this profile of Mickey Mouse because it resembles a map of Antarctica. It doesn't imply the

United States Antarctic Research Program (USARP) is a “Mickey Mouse” enterprise. Certainly not!

2. Arriving at Williams “Willy” Field, McMurdo Station, Antarctica. When I returned to Ohio, my Stetson hat had been on all seven continents in two trips around the world, mostly overland.

3. Chapel of the Snows at McMurdo Station. Observation Hill is in the background.

4. Meserve Glacier in Wright Valley. We drilled holes through the more level tops of the wave-like “steps” on the ice surface. I knew nothing about glaciers or drilling when we began.

5. Our Sikorsky helicopter lands at “Cliffside Camp” named by Gerry Holdsworth. He had planned the drilling program as part of his doctoral research, but he was unable to be with us.

6. We tried using crevasse ladders to climb the ice wall to the ice surface at Cliffside Camp but they weren’t reliable for day-by-day use.

7. We built these two wooden ladders to get us up the ice cliff to the glacier surface. Then we installed a pulley system to transport supplies from Cliffside Camp to the glacier surface.

8. The upper pulley of our transport system at the top of the upper wooden ladder.

9. The Acker Ace drilling machine carried in a sling under a Sikorsky helicopter from McMurdo Station arrives at our first drilling site on Meserve Glacier.

10. The drilling machine is in place at our first drilling site. When we commenced drilling, the string of pipes brought up ice chips, which packed in elbow joints and prevented further drilling.

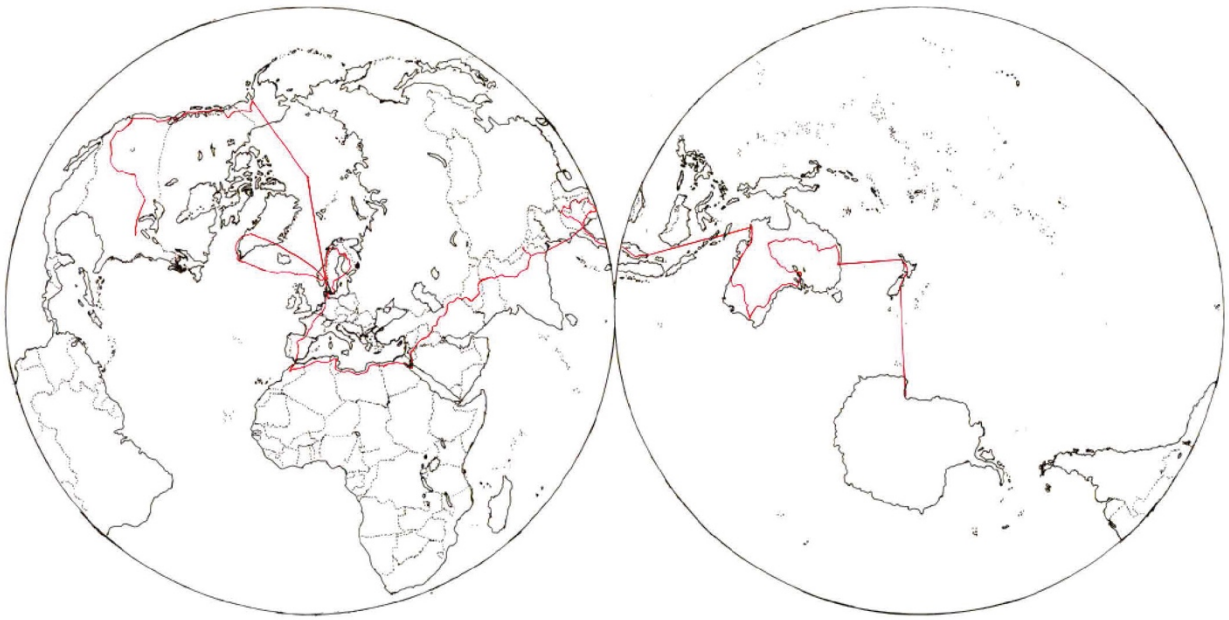
11. We replaced the Acker drilling pipes and bit with flight augers, each four feet long, and drilled three holes successfully. We recorded down-hole temperatures and inclinations, but recovering ice cores had to be abandoned. The view is west, up Wright Valley toward the East Antarctic Ice Sheet.

12. Tinhorn politicians brought by NSF examine the tunnel entrance, now collapsed, to the system of tunnels dug by Gerry Holdsworth to study properties and deformation of basal ice.

13. Our work is completed just as the first snowfall of the coming Antarctic winter blankets Cliffside Camp.

CHAPTER 6 - THE LONG WAY HOME

The red line on the global hemispheres shows my return trip from Antarctica by way of Australia, southern Asia, northern Africa, western Europe, Greenland, and the Arctic; the long way home.



That you may take them to their boundaries and set them on their homeward paths? -- Job 38:20

Having been to the South Pole, I thought I would try to return home by way of the North Pole. Then I would have matched my first trip around the world that for the most part stayed near the Equator, between the Tropic of Cancer and the Tropic of Capricorn, with a second trip around the world that followed a polar route. I had no specific plan, but in general I wanted to see some of New Zealand, spend some time in Australia, travel through Indochina, across South Asia, North Africa, and western Europe to Scandinavia, take one of the flights over the North Pole to Alaska, come down the Inside Passage on an Alaskan ferryboat, see the Grand Canyon, and return to Columbus, traveling overland as much as possible. I thought I could do it in less than six months.

While everyone flew back to the States on 29 January l969, I took a bus across the Canterbury Plains of South Island to Wellington, at the southern tip of North Island. The ferry docked in Wellington after 5 PM, so there wasn't much to do and I turned in early at the YMCA. The next morning, I went visa shopping and found out I didn't need visas for Singapore, Malaysia, and Thailand, so the Indochina part of my trip was looking good. I took a train to Auckland, leaving at 5 PM and arriving at 7 AM the next day. I traveled in a second class car full of Maoris, the aboriginal Polynesian people of New Zealand, so the train trip provided my first immersion with them, brief and artificial as it was. They were a handsome people, on the tall, big-boned side and well proportioned. The Maori women had beautiful smiles. It was Saturday in Auckland, and most shops were closed over the weekend. Although Auckland is the largest town in New Zealand, it seemed provincial to me. I spent the day visiting a small art gallery, a large museum with a superb collection of Maori artifacts, and attending a lecture at the planetarium.

South Island has magnificent mountain scenery in the Southern Alps and North Island has geysers that rival those in Yellowstone, but I decided that if I remained in glaciology I would be going to Antarctica many times by way of New Zealand, so there would be other opportunities to see these sights.

For what its worth, my superficial impression of the Kiwis, as New Zealanders call themselves, after a flightless bird that goes out of its hiding places only at night and lives nowhere else, is that the British settlers made a conscious decision to reproduce nineteenth-century Britain agrarian society before the Industrial Revolution, and to keep it that way. Even the population distribution mimics Britain, with Scots at the southern end of South Island just as they occupy the northern end of Britain. Immigration was controlled even to the point of maintaining the same proportions of farmers, artisans, and shopkeepers that existed in Britain. The only non-Brits allowed to settle in any numbers were the Irish. Non-Whites were virtually excluded, even "Wogs" (White-oriented gentlemen or worthy Oriental gentlemen; I heard both versions). On the other hand, the Kiwis made a conscious attempt to not exterminate the Maoris, and to allow them to maintain their cultural identity, to the extent that was possible after most of the land was taken from them. These policies kept the New Zealand population at around three million, while the islands of Japan had a comparable area and supported a population of l00 million. New Zealand was settled during the heyday of the British Empire and the settlers thought the Royal Navy would always protect them, but in World War II it was the American Navy that kept them from falling under Japanese rule. "Yanks Get Out" was painted in letters three feet high on a fence in Wellington. Probably only one person painted it, but the fact that the city fathers and the other citizens allowed it to stand told me they agreed with the sentiment. They sang a different tune 25 years earlier when the Japanese navy was steaming through the Coral Sea on the way to New Zealand and only the American Navy and Marines stood in its path.

I flew to Sydney from Auckland on the last day of January on a QANTAS flight that had male stewards. Even Russian flights had female stewardesses. That was my introduction to the male-oriented society of Australia. QANTAS is the national airline. It began as Queensland and Northern Territory Air Service, hence QUANTAS. I checked in at the YMCA, where my roommate was a red-headed chap from Boston. He worked in a shop where he pounded bubbles out of the paint tubes used by artists. The next day, Sunday, I attended Mass at the Cathedral and then wandered about the city. I bought the Catholic newspaper after Mass. It had a big story about all the trouble that the Presbyterian preacher, Ian Paisley, was causing in Northern Ireland. As I read the newspaper, I consoled myself with the knowledge that the Green and the Orange in Ireland can get together at least once in awhile, or I wouldn't be standing there. Thirty years later, Paisley was still a troublemaker. Newspapers in both New Zealand and Australia ran blow-by-blow accounts of the "troubles" in Ulster, I was discovering, as Down Under had become home to many Irish. About a third of the Australian population was Irish; less so in New Zealand (18%), and the differences showed in the temperament of the Aussies compared to the Kiwis. Aussies were much more pugnacious. Also on my first day in Sydney, I became aware of Ned Kelly. He was a highwayman in the tradition of Jesse James during the last century, and had become a folk hero in Australia. In his final shootout with the law, Kelly had made a suit of armor from plowshares and charged the lawmen. They finally dropped him by firing bullets into

his unprotected legs.

On Monday I got an Indian visa and bought a $60 bus ticket to Alice Springs, 2000 miles away in the middle of the Australian outback. The bus left the next day at 3 PM, crossed a bridge "the Aussies spent 50 years talking about and 20 years building" (I was told), and headed for Brisbane. We went through hilly country and I got my first look at the tall, straight, trees with thin, smooth bark that are common in Australia. I still don't know what they are called. We passed through Surfers Paradise the next morning, and watched perfect five-foot waves breaking over the full length of the long beach. A bit later we crossed a river and saw Brisbane ahead. I had some time to sightsee between busses. Brisbane still had trolley cars operating. Every shop sold chances for a lottery called the "casket." Aussies were way ahead of us in that respect. Although Brisbane was the largest town in Queensland, it had all the atmosphere and sophistication of a South Dakota cowtown. The bus to Alice Springs crossed Australia's Great Dividing Range in time for lunch at Towoomba, and then passed through heavily forested hill country that flattened out into a forested plain. All the rivers we crossed had dry beds, even though it was the rainy season.

We swapped our American bus driver for an Aussie early the next day, 6 February l969. When we passed a road sign telling us that the song, *Waltzing Matilda*, was written nearby, Sandy (our new driver) started singing it. It is so typically Australian, it should be the national anthem. I saw my first Emu just as dawn was breaking. By then there were few trees. We came to a "dry" river that had flooded the road, and Sandy decided to roar right on through. We got stuck in the middle. I walked with Sandy into the next town and took a picture of his back, with his white shirt almost black with flies. It was a four-mile hike. I knew the town wasn't a mirage because the flies got thicker the closer we got. A man named Brian Patrick got in his truck, took us back, and used it to pull out our bus. I saw my first kangaroo on our way back. It hopped right in front of the truck. Most outback houses were up on stilt pilings, for natural air conditioning and to keep termites out, I was told. They had low tin roofs with barrels at every corner to catch rainwater. The towns had streets paved with horse shit, hence all the flies. We arrived at Mount Isa in the late afternoon, two hours late. The road branched, one to Alice Springs and one to Darwin, but a wall of water had flooded the road to Darwin. Mount Isa is a mining town and its town boundaries made it the biggest town in the world, going by area. I got my first look at Australian Aborigines, called "Abos" by the Aussies. They had brutish faces and black skin, but a surprising number had blond or rusty hair, making them the

photographic negative of a typical Aussie. After our bus was cleaned and the flies were chased out, we continued on our way. An Irishman got on the bus and immediately started giving me his negative opinion of Kiwis and Aussies. I told him I had been to Ireland a year ago, and he was describing the same faults I saw in the Irish. That shut him up, at least for awhile. A large crane-like bird the Aussies call a scrub turkey started running alongside our bus, leaped into the air, and came right through the windshield (Aussies call it a windscreen), landing in the driver's lap. He wrung its neck and kept driving. It had a six-foot wingspan. Bits of glass flew back six seats.

The skies darkened late in the afternoon, and soon it was raining buckets. Our driver got soaked as sheets of rain poured through the broken windshield. We arrived in Three Ways about midnight. While the driver phoned ahead asking about road conditions ahead, some of us went

into a bar. I asked about Aborigine artifacts hanging on the wall. One was a spoon-shaped baby's cradle rocked by the toe. Another was a boomerang that didn't return, called a "killing stick." Soon everyone was discussing Abos. An Aussie said, "They can't hold booze, can't be educated, are unreliable, lazy, live in filth, and are too primitive, but are 'trail wise' for all that." He could have been from South Dakota and talking about the Sioux. The Sioux I worked with on the railroad in South Dakota when I was nineteen were all reliable and hard workers. Abos walk barefoot across the desert and know how to find water. Those who succeed in white society usually have some white blood. One successful Abo was a big red-headed fellow named Paddy Riley. The Irishman on the bus asked about the name and was informed that "some Irishman ran amok." I loved it.

The driver told us he could take us to Tennant Creek, where a taxi would take those going on to Alice Springs. I noticed that many outback towns had names involving water; something lake, river, spring, creek, oasis, waterhole, etc., but most had no visible water supply. It was all psychological. The Aussies drilled deep wells to get water in most outback towns. Nonetheless, the taxi ride to Alice Springs was more like a boat ride. It rained the whole way, 300 miles, and the taxi pushed a wave of water ahead of it as it drove along. Our driver was a woman. The outback was like a vast inland sea; water as far as we could see. The road had a ridge of dirt on either side, making it a canal. Otherwise she wouldn't know where to drive. We passed a big pile of balanced spherical boulders called The Devil's Marbles, and as we approached Alice Springs we saw Snake Ridge south of town. It ended in a series of bumpy hills called Itchy Belly, "where the snake scratched its belly as it crawled along."

We arrived in Alice Springs shortly after 9 AM. I wanted to see Ayers Rock, a monolith 300 miles away "as large as the city of London and as tall as the Empire State Building," but no busses were going there for lack of passengers. I bought a train ticket to Port Augusta, 800 miles to the south at the edge of the Great Australian Bight, the concave Australian coastline on the Antarctic Ocean. I met a Canadian named Clark McGregor, who was also going south. We got bed and board at the government hostel in Alice Springs for three dollars each. Supper was tremendous; fish, cheese, several meats, and all kinds of garden vegetables. Then we went to a bar. It had a unique outback drink consisting of syrups of various fruit juices mixed with soda water, and very refreshing. There were three kinds of bars. Abos drank in a filthy pigsty called "The Public Bar." Abos and whites drank in the "Saloon Bar," which had a few tables and chairs. The "Lounge Bar" was for whites, including wives and children. All three were in one building and were separated by partitions, but the bar itself was continuous on the bartenders' side. The price and quality of drinks changed slightly across the partitions.

Our train for Port Augusta left the next morning. It was a freight train, but it had one passenger car with one $13.95 fare. The cabin next to Clark's and mine had a Scot with the unlikely name of MacJannette, a Norwegian with infected cross-shaped cuts all over one arm, and a Dutchman. The Scot said he was really a MacDonald, but during the Battle of Glencoe one ancestor claimed the name of her French husband, Jannette, so she and her children wouldn't be massacred. He had left Scotland as a cabin boy at age 15, had been all over the world, was now 28, and he was returning home to see his parents before they died. The Norwegian said that he could squeeze water out of anything, after he had made one of the cross-shaped cuts. He was 24 or less and he didn't look strong at all. We didn't ask for a demonstration. The Dutchman said he

was a Citizen of the World. Like the Scot, he was a seaman and had been everywhere. He didn't like Kiwis at all, which was odd because the only people other than Brits (and Irish?) to get assisted immigration to New Zealand are the Dutch; probably because a Dutchman discovered the place.

All three had met in Darwin and had come to Australia to hunt for opals. They told us all they knew about opal mining on the cheap. On the way south from Darwin, their car caught fire in the middle of nowhere. They lost everything except $l5 in cash. Most cars sped by, but one stopped. The driver told them to crawl under the burning car and disconnect the fuel line so the fire wouldn't start "burning up the desert." Then the gas tank exploded and the driver said, "I suppose I could give you a lift, but I'm not going far so it won't help you." Then he sped off. Finally another car stopped and gave them a ride to Alice Springs. Two of them were stowaways on the train, because the $l5 bought only one ticket. Still, they shared their food with Clark and me, canned meat and cheese, when we learned there was no food on the train. We hadn't brought anything to eat. When they found that the Aussies in the next cabin had no food, they gave them meat and cheese too. In all my travels, I always marveled at the generosity of people who have almost nothing.

On the first day, the train passed through a rock-strewn desert, with just tufts of grass here and there, and a few wild horses. I wondered if the rocks had been deposited by the ancient ice sheet that had once covered Australia when it was part of Gondwanaland. The train stopped at a town named Finke where I couldn't tell the Abos and the Aussies apart. I went into the train station to visit. When I said I was an American, they told me about the six-foot-four Texan who came through. A six-foot-six Aussie looked down at him and said, "I thought they grew them big in Texas." The Texan ordered "a big beer" and they brought out a yard-high glass and asked him how far up he wanted it filled. One Abo woman who got on the train was a real gorilla. Her name was Mary Ellen and I could imagine a carnival in America with her in a cage and the barker shouting, "See Mary Ellen the Ape Woman! She walks! She talks!" The Scot had spent time living with Abos east of Darwin, and he learned three Abo dialects. He said each tribe decides how many children it can support, and then assigns quotas to every man and wife. White men's diseases drove the Abos to the brink of extinction, but the survivors were immune and now the Abo population had increased to a half-million, he told me. As we neared the border town between the Northern Territory and South Australia, the Scot asked the old man in the Abo family on the train if the town had a bar or store. "Hell no! There's fuck all in that town." The equivalent American term would be "jack shit."

On the second day, a series of buttes and mesas followed along the western horizon, and lake after lake appeared to the east—all mirages. We saw a few Emu around midday. The only other living things were weeds, scattered scrub trees, and patches of grass. We arrived in Maree in late afternoon and changed trains because the gauge of the railroad tracks changed. It was Sunday and the bar was closed, but it opened for us after we signed statements that we had traveled over 50 miles. The Norwegian was nervous about being a stowaway, so he sold his transistor radio to a Danish shopkeeper for $l5, enough to buy a ticket. The Dutchman said it was worth $55. I told him, "Look, he now has peace of mind. And anytime you can buy peace of mind for $l5 you are getting a bargain." I visited with a Berliner at the train station. He said that when he was in Canberra, the Australian capital, about 30 Germans got off of the train all

shouting at once. The station master was amazed when the Berliner was able to quiet them by saying something in German. He said, “I told the station master that I understood the German character. They must be told what to do by someone in authority, and I told them in no uncertain terms to *shut up*!”

Several Aussies had told me that miscegenation with missionaries and welfare workers produced the mixed-blood Abos with blonde hair. A White man and his two half-breed children got on the train. He was no missionary and no welfare worker.

The train left Maree at 2 AM the next day. When the conductor came by to punch tickets, the Dutchman hid in the luggage rack above the seats, but the Norwegian had his ticket—and his peace of mind. The Scot got to talking about Abos again. He said Abo women like white men. One time when he was in a tavern, an Abo woman came up to him and said, “You my man!” He tried to back away but she clamped a bear hug on him. He pried loose and bolted for the door, with her in hot pursuit. “You husband! You my man!” she screamed, as she chased him up and down the streets until he lost her. The Dutchman said, “That’s how they are. They have no…restraint.”

I already had my own story to tell. Here is what I wrote in my journal: When we stopped in Finke, where Mary Ellen got on the train, I snapped a picture of the mixed Abo and white kids who ran out to meet us. The next thing, this Neanderthal woman ran up to my window screaming, “You take photo for nothing!” She was ebony black with wild blond hair and glittering eyes, and resembled a photographic negative of Ray Nitschke, middle linebacker of the Green Bay Packers (when he still had hair). But by and by her attitude changed and soon she was flirting with me and saying, “I black woman, you white man. My white man!” Then she disappeared, and the next thing I knew she was at the door of my cabin trying to come in. She was coming at me smiling and giggling when I grabbed my camera and pointed it at her. She screamed and ran out. Soon she was back outside with the others, pointing at me, then at her, as she grinned and jabbered with her friends. One woman came over to my window and made the “she’s crazy” sign to me with her forefinger. Crazy! She was as cuckoo as a Bavarian clock!! Later on she caught me out in the aisle and chased me back to my compartment. I will admit she did have some of the features I admire in women. For one thing she had a very strong face. And a determined brow (or brow-ridge, to be more exact!). But for all that, she was too much. She came on too strong. If she hadn’t been so totally bestial, I might have been interested. But as it was, she could have landed the starring role in a movie titled, *The Daughter of King Kong and Fay Wray*. Even if she had appealed to me (which she didn’t), it wouldn’t have done any good. She was already married (I think to a white man—at least some of her gibberish seemed to be saying that, and she had a child that could have been part white). Anyway, the train pulled away, finally, and I saw the last of her.

Here’s one more Aborigine story from my journal. Scotty said that once he saw two Abos taking turns clubbing each other over the head with pick handles. They were taking full swings and coming down full force. Finally, on the third go-around, one of them couldn’t continue. A mixed crowd of whites and Abos was watching. No one tried to stop it. Scotty said their skulls must be an inch thick. Clark told me that they were always fighting in the Darwin saloons. They are like the country. Nothing in moderation. When it rains, it is a deluge. When it stops, there is a

drought. Even the whites are beginning to show the stamp of the land in their temperament and attitudes.

We reached the outskirts of Port Augusta at about 9 AM on l0 February l969. Being a freight train, it shunted freight cars for an hour before pulling up at the station. Port Augusta had l0,000 people and was the shipping point for copper brought down by train from mines north of Alice Springs. I bought a bus ticket for Perth, and onward to Port Hedland, both in Western Australia. The bus arrived at midnight from Adelaide and left after a forty-minute supper stop. Two Brits, two Kiwis, and a South African were on the bus. With South Africans, discussion sooner or later turns to race. One of the Brits had traveled widely, and he remarked that English-speaking countries all seemed to be plagued by racism. My view was that racism was linked to Protestantism (which lacks the universal nature of Catholicism), especially national churches like the Church of England. The Calvinist churches of South Africa were national churches, and racist. Racism is made to order for the Calvinist doctrine of predestination ("we" are saved; "they" are damned). The Lutheran Church in Germany was racist, something Hitler played to after he rejected Catholicism.

The bus to Perth took two days. Camels imported to Australia ran wild in this part of Australia, and I saw one at a bus stop. It pissed on the side of a mini car and tried to eat the stuff on the luggage rack atop another car. A small zoo sold Aborigine-carved boomerangs with Emus and Kangaroos carved into the wood, and boasted that it had "the only piebald Wombat in Australia." I got my first view of the Great Australian Bight on the second day. An old-timer on the bus grabbed the microphone and described the early history of this region. Early settlers educated their children by correspondence. We could see their abandoned houses half buried in the sand along the way. He told us that the shifting white sands constantly buried and then uncovered these houses. The mounds of sand were quite high along the coast. An old Kiwi grabbed the mike and began telling us about his World War II experiences. When he started to recite a military poem, the driver took the mike from him and said, "There's no fool like an old fool." The driver stopped so we could take pictures of the earthquake damage around Meckeling, where 38 people died, and he showed us the great folds across the wheat fields where Earth's crust buckled, leaving a twisting warp eight to ten feet high across the countryside.

After 350 miles of dirt road, we came onto a blacktop highway as we neared Perth. The tall, smooth-barked trees with leaves only on the outermost branches that I had seen on the east coast began to appear. Perth was a nice town; well spread out and nourished by a broad river. The older buildings gave it charm, even though much new construction was taking place. One shopping arcade reproduced the décor of a Medieval cobblestone street inside a walled village, with shops crowding in from the sides. Since it was the rainy season, I asked about road conditions farther north. Contractors on the Ord River dam told me that the Victoria River crossing was under 30 feet of water, and the Fitzroy River crossing was under 26 feet, but the water was dropping. At the auto club, I was told that I could get as far north as Broome and Derby, about l700 miles. I came across the Celtic Club, and went inside. The members were Irish by birth or descent, and sympathy for a united Ireland was the only requirement for membership. It was recreational, social, and non-sectarian.

I spent the night at the YMCA in a room shared with the South African on the bus and a

Brit. The Brit told us how much money could be made from crocodile skins ($200 each), giant turtle shells ($l0 each), and kangaroo skins ($2 each). When the turtles came onto the beach to lay eggs, you ran along the beach flipping them on their backs and slitting their throats. Then you varnished the shells to keep them from cracking in the sun, and left them on the beach until ants ate out their insides.

There were two roads to Port Hedland, one along the coast and an inland route. I decided to take the inland route. My bus left at 8 AM on l3 February l969. It passed through wheat fields that looked like eastern South Dakota for most of the morning, but by noon we were entering the rocky bush country farther inland. This was the fabled mining country of Western Australia. Gold fields had replaced wheat fields. Towns were few and far between, and they were living replicas of the frontier mining towns of the American West in the l870s. We ate supper at a hotel in Meckatharra that was built in l899, the year Paw was born. Most mines are no longer producing, and the land supports sheep on ranches as big as two million acres. Our bus crossed gratings that separated the sheep pastures. A Slovak who married an Irish girl told me that vast inland seas form in the low areas of the flatlands, which bloom almost overnight when the rains end, to convert the sunbaked wasteland into a crazy-quilt blanket of desert flowers of every color. The transformation in human settlements was just as dramatic. Mount Magnet was a struggling relic of the mined-out past and Mount Newman was a haphazard collection of new living units over a plain where rich ore deposits had just been discovered. At the west end of a low ridge north of Meckatharra, a large boulder was balanced above the road. From one angle, it resembled the profile of Queen Victoria in her later years, with her “we are not amused” expression.

I decided to treat myself to a birthday present one day early, on l4 February l969, by taking a tour of the famous gorges of Western Australia, before continuing on to Port Hedland. I took the Hamersley Range route to Roebourne, with a stop at Wittenoom, where a family named McGuire ran a $26 tour through Yampire Gorge and Dale’s Gorge. The gorges form when seasonal rivers drop from the 4000-foot plateau of Western Australia along the Hamersley Range, which is really just a step in the topography. Yampire Gorge opened onto the plain below the plateau and Dale’s Gorge opened into Yampire Gorge. Then Dale’s Gorge divided into two branches, one ending at a circular pool with vertical rock walls rising up for 300 feet on three sides, and the other ending at a waterfall. We spent some time swimming in the pool beneath the falls and climbing over the rocks. A long, narrow worm with a sucker-like mouth swam in whip-like fashion in the pool. McGuire thought it was a tapeworm discharged by a kangaroo. Yampire Gorge had beautiful blue veins of asbestos running between the strata of red sandstone. Dale’s Gorge was smaller, but narrow, deep, and more spectacular. Back in Wittenoom, I spent the night at a motel managed by a German and his Swiss wife. They treated me to supper, and we discussed everything from Hitler (he was in an Oklahoma prisoner-of-war camp) to world travel (she was “a born gypsy”). An Irishman also stayed there. He was young, but he must have had a seventy-inch waistline. Wittenoom had a racetrack, but it was a one-horse town owned by a man named Hancock, who also owned everything on the two million acres surrounding the town. He was a tightwad. His town didn’t even have a school, even though it had lots of kids. The motel managers had five.

The bus from Mount Tom Price arrived at 6:l5 AM on 15 February 1969, my birthday,

and took me to Roeborne. We crossed the plain below the Hamersley Range, passing through giant sheep ranches. Kangaroos mingled with sheep under the few scrub trees. Great piles of boulders were scattered over the plain. They may have been left by the ice sheet that covered Australia when it was part of Gondwanaland in the Paleozoic Era. I had seen similar boulders scattered over the land when I was on the train from Alice Springs to Port Augusta. I had surmised that they were left by the same ice sheet. We dropped down from another plateau past Python Pool (where real pythons were found), and arrived at Roeborne shortly before noon. We saw racehorses on the plains from time to time and Roebourne had a racetrack, like every town we passed through. At the bar, I got to visiting with a German, his Scottish wife, and an Englishman. The Englishman said, “In America they like the Irish, in New Zealand they like Scots, and in Australia they like everyone but Poms” (the Aussie term for Englishmen). Could it be because the English sent their convicts and Irish freedom-fighters to Australia in chains during the last century?

It was Saturday and no busses were running, so I spent all afternoon at the gas station (where everyone stops) trying to hitch a ride to Port Hedland. I offered a doctor going that way $ l5 for a ride. He said okay, after he checked at the hospital, but a few minutes later he sped by without looking my way. It is a universal law that ordinary people are the most charitable and professional people are bastards who won’t lift a finger to help a stranger. A truck driver finally gave me a lift. We came to a truck stop at sundown. I climbed a hill made of flat plates of rock that overlapped like fish scales so I could view the sunset. Back at the truck stop, I ran into a Ukrainian in the bar who extolled the virtues of all Slavic people, especially Russians. Then he met a Yugoslav lad and I was rid of him. A lot of Slavs came to this part of Australia for work in the mines. My bus to Roebourne was full of them. The truck driver and I left in the early morning hours. An electrical storm raged to the north, ahead of us. We passed a big hill which was “all iron” according to the truck driver. We arrived in Port Hedland at dawn. The truck driver wouldn’t let me pay him, but he took a crisp greenback dollar I gave him “as a souvenir.”

As soon as I arrived in Port Hedland, I wanted to leave. I got to talking with a truck driver who hunted crocodiles and had been around Aborigines a lot. He told me, “Those lobes of the Aborigine brain just aren’t developed. I don’t think they are stupid. I would trust one of them in the bush before I would trust a white man. They know about that. But they are different from the American Negro. He has brains and can compete in the white man’s world, but our black people just don’t have it.” I asked him if they had natural rhythm. I walked out and began looking for a Catholic church, since it was Sunday, but a tropical cyclone roared in and swept across the streets in sheets of rain that obscured all the buildings. In the next 20 hours we got l3 inches of rain. The cyclone took out all the roads and power lines from Port Hedland to Broome. Many of the people in Port Hedland slept on the beach and fished for food, especially Slavs who had little money. I slept on a tennis court the second night because the boarding houses were full. At a bar, a third-generation Aussie of Czech descent tried to make me drink something stronger than lemonade. Finally I shouted, “Look! I don’t like that shit! And I’m not going to drink something I don’t like just because the ‘men’ drink it!” Everyone nearby stopped drinking and looked at me, but I was several inches taller and 50 pounds heavier than any of them, so nobody made a federal case of it.

On l9 February l969, I booked an early morning flight from Port Hedland to Darwin, by

way of Broome. It left the next day and gave me two days in Broome for sightseeing. Overland transportation was impossible. Flood water was flowing at least two feet over the *top* of the De Gray River bridge. That was the only bridge on the way to Broome. All other river crossings had to be forded. Walt Edwards, the trucker who talked about the lobes of Aborigine brains, told me that two of his big Mack trucks had left for Broome before the cyclone hit. They headed back to Port Hedland when they saw it coming. When the drivers had to cross a swollen stream, they chained the trucks together so if one began to get swept away the other would hold it. When the water got above the engines, the current picked up one truck loaded with five tons of empty refrigerated boxes and swept it away. The front half of the other truck was yanked sideways before the chains broke. The drivers had to sit on top of its roof until the water receded.

Duncan--An Embellished Account

When I arrived at the small airport in Port Hedland after midnight, I came up behind the only other passenger waiting at the check-in counter for the flight to Broome, a very thin youth wearing only a dark lightweight jacket and sandals. At least all I saw were his smooth bird-like white legs in striking contrast to his dark jacket. Had he forgotten his trousers? He turned toward me and I saw he wore dark matching short pants with no legs, a white shirt, and red tie. English boys often wore short pants and a jacket. He had a thin handsome face. With a boyish smile he introduced himself as Duncan Ormandy. He was indeed English, in Australia on holiday. His voice was warm and had the endearing quality of occasionally reverting to the higher register common in young teenage boys. He could pass for a tall boy 14 or 15 years old. When I asked, he said he was seventeen but would be eighteen in a month. His rapid growth years were over. Duncan was a head shorter than I. He certainly didn't weigh much.

Duncan had worked as a steward apprentice in Dampier, a town built and owned by the Hamersley Iron Company. The shopping center is all in one building. We left Port Hedland after 3:00 AM and arrived in Broome about 5:00 AM just as dawn was approaching. Duncan and I tried to wait in the park until the Roebuck Hotel opened, but little gnat-like insects kept biting us, favoring Duncan's bare legs, so we walked around and got in the hotel about 7:30 AM. Our room had two single beds. Duncan stripped naked. I never saw a boy so skinny. He sprawled his thin lithe body supine on his bed without getting under the bedspread, stretched his stick-like arms and birdie legs, and was soon fast asleep. A good choice, the night air was hot and humid. We slept until 5:00 PM. Then we got up refreshed. Duncan put on his sandals and tiny white short pants that only covered his groin and left the lower part of his butt cheeks exposed. We had supper at Kim's, a Chinese place recommended to me at Port Hedland. It was over-rated, but posted no clothing restrictions that might have kept Duncan out.

A beautiful sunset lit the western sky in blue and orange hues but my camera was back at the hotel. After dining, Duncan and I wandered around town. Duncan was almost bare naked in his short pants. His little butt and groin were barely (pun intended) covered. Girls waved to him. He waved back and glanced up at me with his boyish grin. Duncan enjoyed the attention. Western Australia is hot. Men and boys wearing only short pants and sandals or boots were common enough, but Duncan still drew attention. Duncan was a bit below average height, though he seemed taller because his body was so narrow and thin. The population was white, Malay, Japanese, Chinese, and Aborigine. Later, back at the hotel's bar, we saw some interesting

and baffling racial mixtures, so miscegenation was not a taboo. The way girls ogled Duncan, I'd say they preferred it.

Broome had a mother-of-pearl industry. It was nearly wiped out when plastic replaced pearl shell in most commercial items such as buttons, etc. One store still sold decorative spoons, shells, and like items. It was obviously for tourists and people with money, being the only class place in town. The remaining industries in town are the export of cultured pearls and beef cattle from the Kimberley region. The pearling fleet consisted of perhaps ten sturdy little gaily painted sailboats (with motors) which were sitting high and dry alongside the dock. At the height of the pearling days there were 350 of them. Tides here are 27 feet high and expose beaches a half-mile wide at low tide. A new jetty 2700 feet long allows ships to dock even in low tide. A meat processing plant prepares the meat for shipment and it is top grade. Kimberley cattle are lean, so the beef is not marbled with fat. "Australian Beef" served in swanky U.S. restaurants comes from here.

Duncan and I flipped a coin to see if we would see the Jayne Mansfield film being shown. Jayne lost. We returned to the hotel and I washed some clothes. Then I went to our room. Duncan joined me shortly and told me he asked for a bag of peanuts at the bar. Duncan was angry. He dropped his short pants and kicked them onto the bed. He was told the price was 15 cents, although the marked price was 10 cents. When he asked about it the barmaid pointed toward the office and shouted, "Talk to the boss!" That was all she would say, so he did. The owner snapped, "How much do you make up here? Duncan told him he was just passing through, and remarked, "Typical Northern hospitality!" "Typical Southern stupidity!" was the reply. "I dropped my shorts and mooned him. Like this!" Duncan turned, spread his legs, pulled his cheeks apart, and opened his hole in a Full Moon, while looking at me over his shoulder, now grinning. I said, "Well, I suppose that was worth the extra 5 cents." Duncan laughed.

Aussies can be very touchy, thin-skinned people. They don't like outsiders telling them how to run their country. Duncan told me they seem to have it in for "Poms." A lot of Englishmen and Aussies have made that comment, so perhaps it is true. Walt Edwards said Aussies like everyone but Poms—Scots, Irish, Yugoslavs, Poles, Greeks, Italians, but not Poms. I commented that perhaps this is because originally England used Australia as a dumping-grounds for convicts and others considered to be undesirable in British society, and Aussies have resented it ever since. Walt said that was part of it, perhaps, but he said the English often come here at Australian expense (Poms pay only 10 pounds) and then proceed to criticize the country.

Aussies definitely don't like criticism! I met an English scientist in Roebourne who was traveling around Australia and he also commented on the "unfriendly" attitude of Aussies toward him. I haven't noticed this attitude toward Americans, although Aussies are suspicious of American businessmen investing in Australia. Duncan told me, "I usually shut them up by suggesting Australia will become the fifty-first state."

At breakfast the next morning, I asked the hotel manager about the pearling boats. He said they will not sail until March because during the cyclone season the ocean currents are dangerous to divers, and the ocean floor gets so stirred up with mud and debris that divers couldn't do anything anyway. He said the boats are owned by Japanese who hire Malays to do

the diving. The boats are out six weeks at a time harvesting cultured pearl beds. They bring in young clams and in a small factory they insert a small ball of ground clam shell under the body of the clam and then "plant" these clams in the pearl beds. The ball irritates the flesh of the clam and it surrounds the ball with excretions that harden into pearl. The clams have to be flipped over periodically so the pearl grows spherically. It takes three years to make a pearl. The only way a cultured pearl can be distinguished from a natural pearl is by x-rays to see what impurity caused the pearl to grow. He said natural pearls are caused by a grain of sand or some other foreign particle which gets inside the clam shell. They occur in deeper water where tides and currents flip the clams over, causing the pearls to grow spherically.

After breakfast, Duncan and I took a four-mile hike beyond the edge of town to see the new jetty, passing the meat processing plant on the way. It looked like the wreck of the *Hesperus*, as Maw would have said, even though a sign told us it was "The newest in Australia—perhaps the newest in the Southern Hemisphere." If that was the newest, I'd like to see the oldest! We followed the beach most of the way to the jetty, and saw one of the poisonous Jellyfish riding in on the surf. Duncan had heard a woman got stung when she and her husband were swimming. Serum had to be flown in from Perth to restore her from paralysis. We saw some Malays casting nets. They said if you put hot sand on the sting it would counteract the poison. We arrived at the beach and watched the big waves breaking ashore with the incoming tide. Duncan said, "Damn the jellyfish. I'm going swimming!" Duncan had been wearing only his tiny short pants. With a slight tug, they dropped to his ankles and he waded naked into the surf. I joined him. We body surfed on the big waves and then battled them standing hip deep in water as waves battered our naked torsos. Duncan's spindly body was easily knocked head over heels but I managed to stand my ground. It was great fun. When we were exhausted, we came ashore to dry on one of the big flat blocks of stone that covered most of the beach. We were a study in contrasts, Duncan's smooth body thin as a rail alongside my big muscular hairy body. I suddenly felt protective, like an older brother.

"My father was a big strapping fellow like you," Duncan said as he stared at the sky. "We did everything together. I'll always be thin because I have my mother's slight frame. My bones are too slender to carry much weight." So he lost his father. I said, "Only ten years ago I was really thin too. My mother had just died when I was 19 and I stopped eating. When my weight dropped below 120 pounds I got scared and began eating again." Duncan wasn't impressed. "You were still heavy. I'm not even 5 stones." (70 pounds) "You weren't meant to be skinny. I like being skinny. I wouldn't add even one pound. Body builders like to show their thick muscles. I like to show my thin bones." In my travels around the world, Duncan was special. We lost a parent at a vulnerable age, and he looked like that skinny adolescent boy I had been, only with a much smaller frame. We both liked who we were with no apologies.

We didn't sunbathe long, although we were both white as sheets, Duncan from a long winter in England and I from a long summer in Antarctica. "My skin doesn't tan. I sunburn easily," Duncan said as he pulled on his tiny short pants. "Then you'd better walk in the shade," I replied. Trouble is, there was no shade. A man driving a pickup truck stopped to give us a ride from the jetty into town. Duncan sat between him and me in the cab. He looked down at Duncan and said, "You like being naked?" Duncan looked up with his boyish grin and answered, "On a hot day like this, yes." "Then you'll always be naked around here, my skinny Pommy lad."

Slapping the inside of Duncan's bare thigh and giving the spare flesh a squeeze, he added, "And you'll be black as an Abo."

Back in town, Duncan and I went to see the "shipyards" where Abos (Aborigines) made and repaired the pearling boats. They were a friendly bunch, so I took the only pictures of Abos I got in Australia, and at their request! One boat was being made seaworthy. The "shipyards" were only a small diesel power plant which supplied electricity for the usual power tools which were new-looking and were housed under a roof supported on poles. The boat had been pulled up out of the mangrove swamps on rails which came up into the work area under the roof. The Abos said that, in the heyday of pearling, boats were lined up all along the waterfront and no mangroves were here. The opposite is true now.

I asked the Abos if I would see them at the bar later tonight. One of them said they weren't allowed to drink. Then I remembered reading that such was the case in this part of Australia. One woman began singing a Country and Western song. She sounded like Kitty Wells. I told her that and said I was an American. She told me white people had told her she should go to Perth and perform. Her father, a white-haired, grizzled old pureblood, cornered me and began to air his complaints about the government. He apparently had written Canberra presenting his grievances, but got no reply. He called his people the "True Australians." He said the others were Australians too, but they were born on a white sheet in a hospital while the True Australians were born on the ground in the dirt—and that is why the land was theirs more than the whites (whom he would have kicked out).

I asked why he didn't mention the fact that Aborigines were in Australia first, but instead based his claim on the fact that he was born on the ground. He said, "Listen to me! I'm not a monkey or a dog. I'm a man—as good as any white man!" White Aussies often called Abos apes (some did look like apes). They knew it and resented it, but couldn't do anything to stop it. The old man said Abo kids were educated alongside White kids, but then couldn't get a job. It all sounded very familiar. His daughter took pity on me and dragged him away.

Every Friday dances are held at the two bars in town. I saw some weird racial mixtures at the bar we entered, and viewing some of the dancing couples, I knew there will be more. We arrived at about 7 pm. Duncan was barefoot and wore only his white short pants that "barely" covered his groin. The girls he danced with were in dresses or skirts and blouses. A few wore slacks. The first girl was a shapely mulatto with a pretty face, dark blond hair, almost Duncan's height, and slender. She walked over to him in her bright red dress before the music started. He stood there letting her fingers bump down his delicate ribs, push in his belly button, enclose his little waist, and trace the sharp edges of his pelvis. When the music started, Duncan drew her close to his body with her waist snugly between his bare jutting hipbones, Her fingers traced his shell-like shoulder blades and the beads of his backbone vertebrae. They moved about the dance floor as if glued together to slow rock music.

The band was the Broome Beats, two Malays and an Abo. The dancers were whites, Abos, and Malays. No Chinese attended the dance or were seen at the bars. They are very clannish and stick together here as elsewhere around the world. All the women and girls wanted to dance with Duncan and they all go their chance. I thought, "How often does one of these

mulattos get to dance with a naked handsome white youth?" Wearing his tiny close-fitting short pants every day was paying off. Other white youths and men were much heavier, the men often tubby and wearing large baggy short pants. No competition from them. Duncan even danced with some little girls 12 or 13. They were barefoot and stood on his bare feet, wrapped their arms around his thin waist, and rested the side of their head against his bony chest, while he played with their curly hair. When the music was fast, he danced with ample women years older than he was and over twice his size. He held outstretched hands to them while they twirled about or stood in place stomping their feet and clapping their hands. He was good and made all the girls and women of whatever size, shape or age look good. Some of us stopped dancing just to watch.

After the lights failed at the dance, a fellow who said he fueled planes at the airport invited Duncan and me to his place, a pigsty near the airport. Also nearby was a convent. He told a story about novitiates swimming naked in his pool during a wild party. His mind was dirtier than his house. He then described priests driving around in big cars and a widow who couldn't spend her "church money" to buy milk for her child. Duncan announced he was an atheist. I was bored. It was dark with only a few street lights so Duncan walked naked back to our hotel room. No desk clerk. In our room, Duncan took out a small tape recorder and began to dance to rock 'n roll music. He outdid Elvis "the pelvis" Presley with his writhing body and jutting hip bones. I was reminded of an old film clip showing Josephine Baker, an African American entertainer, doing her "banana dance" in La Revue Negre in Paris in the 1920s. She was naked except for a string of bananas dangling from her hips. She had ample breasts. Duncan had a flat chest and only one "banana" but otherwise the dance was much the same.

We arrived early at the airport. Duncan was wearing the same dark outfit and sandals he wore at the airport in Port Hedland that showcased his birdy white legs. The plane left Broome at about 3:00 AM, and stopped for 20 minutes each at Derby and Windham on the way to Darwin. We could get off and walk around. Duncan drew some stares. He liked that. As dawn broke we were flying over the Kimberley District, a rugged land of soaring buttes and lonely mesas. I could see why the roads through here were closed; the whole region was totally saturated. The few rivers were miles wide and even along the coast the only thing that distinguished the ocean from the continent was a border of flooded trees. I was reminded of the view of the Amazon basin at full flood which I beheld in 1967. The occasional road down below looked like a canal through the forest and clouds were reflected from lakes and ponds in the clearings.

We landed in Darwin about 8:00 AM and tried to get in at the Salvation Army hostel, but it was closed. Hippies had invaded it, neighbors complained, and finally the police closed it on the pretext that only one shower and toilet were available for 12 people. The director was new and blamed his predecessor for the closing. One hippie in particular was the cause if it, he said; "He had long hair, was absolutely filthy, and the seat of his shorts was ripped out—you know, a real exhibitionist." I might add that in northern and western Australia many boys and men wear nothing but short pants, often without legs, and shoes or boots without sox. He said this hippy refused to move on (the hostel rule gave a four-day limit per person), but had he been in charge then, he would have the police move him out. I had read in the newspaper that hippies were "invading" Darwin and lived on the beach or in psychedelically painted shacks on the edge of town. We checked the nearby beach. It was true. Most wore very brief bikinis. We heard one section was reserved for naked sunbathers.

Duncan and I finally found a Greek-owned boarding house ($10 a week or $3 a day for a room with two single beds). The cheapest place in Port Hedland was called Jungle Paradise. It was a jungle all right, but no paradise, and charged $1 per day. I figured it was rock bottom for Australia. This Greek place was clean and had showers, laundry, and kitchen facilities—a real bargain, I thought. The Catholic church across the street was building a school or something, so work was nearby also — a prime consideration for the hitchhikers and immigrants. Downtown, I was discouraged by the travel bureau about getting into Indonesia via Portuguese Timor. The whole island was a morass right now, and I would have to walk from 70 to 180 miles along a road flooded and washed out. People were still flying there, hoping to get through to the Indonesian part of the island, but they were returning in failure, reporting it was a ten-day trek through mud and water over a road that could be covered in one or two days normally. Duncan wanted to visit Bali. "Everyone says the girls there are stunningly beautiful and scantily clad," he told me.

When we entered our room in the boarding house, Duncan quickly stripped off his traveling clothes, took out his tape recorder and began to dance naked to bagpipe music. His legs and feet were a blur, but his torso and his arms over his head moved only in slow motion. When the music stopped, I asked, "Where did you learn to dance like that?" "In Scotland," Duncan replied. "Two boys and I were dancing trio in a carnival one summer." He took out a photo from his suitcase and handed it to me. Duncan was flanked by two boys in Highland regalia but he wore only a Tam O'Shanter cap, a micro kilt, and low-top black shoes with square brass buckles. They were doing a little hop that in Duncan's case left nothing to the imagination. "Where did you get that kilt?" "In a children's shop. It was for toddlers. The carnival manager taught us two dance routines, one for the public and one in private. The private dance included a little striptease." I remembered the carnival in Pierre, South Dakota, in the 1950s which had hoochie-koochie dancers and for an extra 50 cents we could see "the rest of the dance behind a partition in the back of the tent. "What was left for you to tease?" I asked Duncan. "You have to ask? I was *au naturel.* The boys got to keep their kilts on. Except at the end of our act when we all mooned the audience."

Duncan had remained at the boarding house to bathe and do laundry. He had fallen asleep lying naked on his bed waiting for his clothing to dry on a line in our room. In sleep, he conveyed innocence, vulnerability, and angelic beauty. I showered and gathered my clothing for the laundry, then hung it to dry on the line next to his. Duncan awakened and clasped his hands behind his head while I gave him the bad news about travel in Indonesia. He said, "I'll stay here for now." We visited until our clothes were dry. He ironed out wrinkles in his traveling clothes and put them in his little suitcase. Then he paused. "I've watched you draw sketches of Abos and other people. I made an American Indian loincloth I wore at a costume party in England. I brought it to Australia to wear on some beaches here. Would you sketch me in it? I'm wearing it to the beach." I said I would, so he took the "costume" out of his suitcase and put it on. It consisted of two small bits of cloth, each six inches long and three inches wide, the gap between his thighs at the groin. One hung in front and one hung in back, connected by a strip of cloth about an inch wide. It had to be low on his narrow hips to "barely" cover his groin and buttcrack. I told Duncan an Indian loincloth was one piece of cloth between the legs that hung over a cord in front and back. "Too confining," he said with a wink, "I like the freedom I have in my

costume."

The "costume" was black except for two white arrows 6 inches long and 1½ inches wide, pointing down in front and up in back. He gave me front, side, and back views, asking, "What do you think?" I said, "What's to think? Nothing's there!" Duncan laughed. "The arrows are so I know what's the front and what's the back. It gets attention. The girls love it, but I mustn't wear it on windy days. I want those gorgeous beach girls in bikinis to see me in this. It beats a bikini!" Indeed it did. In a breeze. The side view gave a peek behind the front arrow.

I made my sketches, front, side, and rear, on a sheet of paper and handed it to Duncan. He looked at it, smiled approval, asked for my pencil to sign it, and handed it back, "So you'll remember me." I packed and we left our room. Duncan flashed me his boyish grin and stopped to pose in front of a tall wall mirror. And yes, the few people in the large common room took notice. His "Indian costume" was tailor-made for his ultra thin body and he looked good wearing it. It seemed like formal attire, if you can imagine that. But Duncan was now an enigma to me. His shy boyish good looks and slight body conveyed youthful innocence. But the white arrow pointing downward in front looked like the obvious extension of his white body and the white arrow pointing upward in back would appeal to homosexual fashion designers. Duncan *had* to know his design was an invitation to sodomy, yet his erotic interest was focused entirely on girls. Was Duncan an innocent or a tease who courted real dangers? He seemed innocent. Was he Adam in the Garden of Eden: "And they were both naked, Adam and his wife; and were not ashamed." Duncan was certainly chaste in the few days we shared, though he was usually naked in our rooms and often nearly naked in public. He told me, "Girls will love my Indian 'swimsuit' but it only looks good on a thin white body like mine. White. So I'll have to find girls under a big beach umbrella." We had a light breakfast together at one of the small tables next to the kitchen. We were going separate ways but we vowed to stay in touch. We never did.

Duncan had taken several pictures of me alone or with others. He handed his camera to a woman in the common room and asked, "Would you take a picture of Terry and me standing together?" She did. I didn't ask for a picture using my camera. I didn't take any pictures of Duncan. He was always naked or nearly naked. But I had my drawing of him, and it's at the end of this chapter. To me, Duncan was, as Winston Churchill said of Russia, "… a riddle wrapped in a mystery inside an enigma." Duncan was carefree, a gay youth without the homosexual associations now attached to that word. I'm reminded of the 1942 novel by Cornelia Skinner and Emily Kimbrough, *Our Hearts Were Young and Gay.*

When I first saw Duncan at the airport in Broome, I was captivated by how exquisitely handsome he was. His rich brown hair and large brown eyes combined with a peaches-and-cream complexion, thin narrow face, and slender neck to make a striking impression. While Duncan slept, and then as we visited, we were free from the distractions he aroused in public. I had dressed but he remained naked as he gathered and ironed his jacket and traveling clothes. The human body has three extreme forms, one displaying bones, one muscle, and one fat. These are called ectomorph, mesomorph, and endomorph physiques. Ectomorphs display small delicate bones. Mesomorphs have heavier bones covered by muscles. Endomorphs have muscles covered by fat, lots of fat in extreme endomorphs. Duncan was an extreme ectomorph. His bones were thin and delicate but they were visible because his muscular development was minimal and fat

was non-existent. His shoulders, chest, waist, and hips were narrow and pleasantly proportioned. He could easily wrap his hands around his tiny waist. His arms and legs were thin, even spindly. The sharp ridges of his ribcage, iliac crests, and pubic arch enclosed his sunken abdomen like scalloped porcelain edges of a shallow white dish. There is something to be said about displaying thin ivory bones instead of thick ruddy muscles. Particularly striking was the seemingly contradictory combination of youthful vigor and vulnerability, vigor because he had nothing excessive weighing him down, vulnerable because he had nothing in reserve to protect him. This type of body is most common in immature youths. I saw it in remote Ethiopian villages where thin boys may remain naked even as adolescents, when everyone else is clothed. It is a body that can become skeletal with age. But in a boy approaching manhood it can be quite appealing. Duncan was a delicate exquisitely beautiful white flower, a blossom for a season and then perhaps gone forever.

I decided to fly to Singapore on the 5:00 PM plane but at the airport I learned that it wouldn't arrive until 2:00 AM tomorrow at the earliest. A youth like Duncan, but shorter and heaver, was also there with several of his friends to see him off. When the ticket agent asked his address in town, he looked at his friends and then wrote "The Beach" on the form. It was true enough. All of them had spent the night on the beach, but they were clean and not beatniks. When a plane cannot keep its schedule, the airline puts the passengers up for the night at its own expense. However the clerk told both me and the youth to return or call about 10 PM to learn the status of the flight. He offered no hotel accommodations. When the youth asked for a hotel room, he was given one (with reluctance) at the Darwin Hotel. Then I asked for the same, and we were given vouchers for cab fare to and from the airport, a shared hotel room, and supper.

The Darwin Hotel was *the* hotel in Darwin. But it had no elevator, and air conditioning in the dining room consisted of a row of flaps hanging from hinged rods attached to the ceiling, with all flaps pulled back and forth by a rope attached to them. The rope disappeared through a hole in the rear wall. To get even with the attempt of the airline (BOAC) to keep us confined to the beach until flight time, I ordered almost everything on the menu. The waitress then asked for our room number so the meal could be put on our bills. I told her I came in off the beach. I ate rump steak, a dozen oysters, a large salad, a plate full of various cheeses, and the most high-calorie dessert on the menu. I didn't use our hotel bedroom.

Like Duncan, my young companion was English, but unlike Duncan he wore long pants and a sports shirt. He was going to Bali via Singapore and Djakarta. He said the Darwin-Singapore and Darwin-Djakarta fares were identical, so I thought of going to Djakarta myself. He said the Bali girls wear only a garment about the hips and are very beautiful. And prices are next to nothing. Flights directly to Bali from Darwin and Bangkok were in the works, so it won't be long when the tourist invasion begins and all this changes.

I came across an article by a female reporter who visited a clothing factory that made military uniforms during World War II. Women were seated in front of sewing machines in long lines in a vast, dimly lit room. As the reporter was interviewing the floor manager, one sewing machine speeded up, the woman operating it let out a shriek, and then collapsed over her

machine. The reporter wrote, “As I started to rush to her to see if I could help, the floor manager grabbed my arm and said, ‘She’s okay. These women have husbands and boyfriends who are overseas. Sometimes they put ball bearings in their vaginas and when they operate the foot pedals on their sewing machines the stimulation brings them to orgasm.’ The woman who fainted soon recovered and resumed sewing. I didn’t know whether to believe the floor manager until I was leaving and heard another sewing machine start speeding up farther down the line.”

Since the Darwin-Singapore and Darwin-Djakarta (via Singapore) fares were the same, upon returning to the airport I asked to have my ticket changed to Djakarta in case I decided to visit Indonesia. It was past 3:00 AM before the plane (originally scheduled for a 5:00 PM departure) left. We landed in Singapore about 6:00 AM, gaining an hour in flight. It was still dark. The taxi downtown was $3 (Singapore) or $1 (American).

Our plane didn’t leave until after 3 AM and landed in Singapore at 6 AM, gaining an hour in flight. We were joined by an Aussie on the way into town, where we began sightseeing and looking for a place to stay.

The English youth had been in Singapore and knew of a Chinese hotel charging $3 per night. After the city came to life, we went with him to that part of town. When we got to the hotel it was filled. Lots of Caucasian hitchhikers were in that district and had all the rooms. One girl (about 25), her son (maybe 3), and her mother were hitching the Orient after coming from Hawaii via Hong Kong. They planned to hitch up to Bangkok and then hitch through India and into Europe. The girl was very cheerful, her boy was a ball of energy, and the locals took to them. Little families traveling this way was not unusual.

We continued looking for a hotel and came upon an Indian temple. Inside, two vampire-looking figures guarded the entrance to an inner room. The Indians let me take some pictures. The English lad and the Aussie went their separate ways. I got instructions to a Chinese YMCA and went there to spend the night. I invited a friendly Chinaman into my room for a visit, but when he began to act queer I got rid of him. In all of my travels, that was the first time I ever thought I was with a homosexual. It was Sunday, so I got instructions on how to find the nearest Catholic church, and went there in time for the 6 PM Mass.

The next day, I bought a bus ticket to Kuala Lumpur, the capital of Malaysia, after resisting one final time the temptation to go to Bali. Then I took a trishaw (rickshaw) to the library, where I finished reading *God and Golem*, a book by Norbert Weiner on the religious implications of cybernetics. Then I went window shopping. I had learned the hard way that if I wanted something, I should pay what it was worth to me to have it, because invariably someone else would tell me he got it for much less. Then, no matter how badly I got took, I had paid my price, not some other price. It’s the only way to have peace of mind while shopping in foreign countries. Back at the YMCA, some Chinamen in the back yard were taking instructions in what looked like some Chinese version of Karate. They were very serious about it. I got to talking with an Aussie racist who said, “There is a lot of Negro blood in the Italians, especially those in southern Italy.” I ran through their list of accomplishments in exploration, the arts, literature, science, engineering, religion, law, you name it, but he was not impressed.

The bus to Kuala Lumpur left the next morning, 24 February l969. On the way to the bus station, I saw some wooden coffins on display in a Chinese shop. They were very ornate and richly carved. Singapore was on an island off the Malay Peninsula, so as soon as the bus crossed the bridge to the mainland we were in Malaysia. Many rich Chinese businessmen lived in Singapore, and I mentioned the expensive coffins to a Malaysian on the bus. He told me the Chinese were known as "Oriental Jews." I said, "Who can imagine 800 million Jews?" Now its over a billion. I got to visiting with an English girl on the bus. Her name was Rosamond deCourcey-Ireland. Who could imagine that name? We passed many rubber plantations, and I noticed how orderly and well-kept the trees were. I told her about the "natural" state of the rubber plantations in the Amazon Basin, and how the British ruined the Brazilian rubber monopoly by smuggling out seedlings and planting them here on the Malay Peninsula, using modern agricultural methods. The road to Kuala Lumpur was very good and heavily traveled. When we arrived, I parted company with Rosamond and headed for the train station to buy a ticket to Bangkok. It was the most impressive train station I had ever seen. Two well-dressed Indians in turbans were visiting and I overheard one say, in his Oxford accent, "The problem with In-jah…is too much *copulation*."

The train went to Butterworth, on the Malaysia-Thailand border. It didn't leave until evening, so I asked how to get to the YMCA. An Indian lad in a Mercedes drove me there. He carried around hundreds of dollars as a matter of course. He was a rare example of someone who was both rich and hospitable to travelers like me. Maybe he was too young to have been corrupted by money. It was an overnight train, and I caught the train from Butterworth to Bangkok with only minutes to spare. I traveled second class without sleeper, although second class with sleeper had a fan, sink, and toilet for only $l.50 more. I was really getting cheap. Three other Americans were in my car, a physicist and a young couple who had visited the wife's missionary sister in Indonesia. They told me that ex-communists there were open to evangelism, out of fear of the Moslems and because they admired Christian charitable work. That provoked an argument with the physicist, who said he was an atheist because he saw evil falling randomly on people, whether they worshipped God or not, so God couldn't exist. He had just finished his doctorate on the ordering of magnetic dipoles in ferromagnetic minerals, so I argued that the universe seems disordered from an electron's perspective, but we know that all this random motion actually results in an ordered universe. We see evil prevailing in the short term, but God draws goodness and justice from that evil in the long run. If you can't see it, that only proves you are not God. I asked him to read *Romans 1* from the Bible the Protestants had. When he did, I said, "Your atheism is not from your intellect, it is from your will. You *will* not to believe."

Some drunken whites came into our car and started talking about the spread of "black syphilis" and "black clap" by American servicemen fighting in Vietnam. It was incurable and ate the body away like leprosy. This belief was widespread in southeast Asia, Australia, and New Zealand. I first heard about it in Australia. An Aussie in the group said there was an island in the South China Sea where American carriers were marooned by the military. They never returned and were reported lost in action.

All day the train passed through forested plains from which occasional outcrops of massive rock domes thrust upward for hundreds of feet. They usually occurred in clusters, and

seemed to be made up of vertical rock strata, rather than granite, but they were too heavily forested for me to be sure. They weren't volcanic plugs, like Devil's Tower in Wyoming.

The following morning, Buddhist temples became more common in the villages as we neared Bangkok. The train arrived at l0 AM and I checked in at the Thai Song Creet Hotel, which was the hitchhikers' rendezvous near the train station. The owner looked like a Chinese Alfred Hitchcock. A pleasant surprise was that king-size bottles of soda pop cost only 5 cents (one Baht). I wanted to see Angkor Wat in Cambodia. It was part of a vast Hindu temple complex that had been abandoned and lost in the jungle after Cambodia became Buddhist. A French missionary found it in the days of French Indo-China, he told a French butterfly collector in the same region, who then told the world. It would be on the Asian list of the Seven Wonders of the World, along with the Great Wall of China and the Zwe Dagon Pagoda in Burma. A Californian at the hotel had just made an overland circuit through Laos and Cambodia, and he recommended that to me. I applied for a visa at the Laos embassy in the afternoon, and then went to the United States Information Agency. It had no information, U. S. or otherwise.

The next morning, 28 February l969, I picked up my Laotian visa. Cambodia had severed diplomatic relations with Thailand, but the Indonesian Consulate handled Cambodian visas. The Indonesian Consul told me that Cambodia didn't have an embassy in Vientiane, the Laotian capital, and he said the road from Laos to Cambodia was closed because of Communist Pathet Lao terrorist activity. Back at my hotel, I met people who had been in Vientiane and they said Cambodia had an embassy there. This was so typical of travel in the Third World; no two stories are the same.

One fellow in the group had one leg half as long as the other. He had studied Hinduism under the same Guru the Beatles went to in India. In Hindu belief, he told me, souls are created continuously and infused into lower animals. If the soul fulfills itself in one animal, when the animal dies the soul passes into a higher animal. The highest animals are Brahmin cattle, which are sacred because when they die the souls enter the lowest human caste. The souls then move up through the caste system as the humans die, provided the souls are fulfilled in each caste, until they become Brahmin priests. When the priests die, the fulfilled souls are absorbed into Brahmin, which is the Hindu concept of God. Unfulfilled souls at any stage are reincarnated in a lower stage upon death, and begin the journey leading to Brahmin from that stage.

I told him that Hindu thinking must have influenced the French Jesuit, Tielhard de Chardin. He speculated that evolution proceeded in discontinuous jumps of consciousness with no corresponding change in chemical or biological complexity. An example of jumps with no chemical change is the transformation from ice to liquid water to water vapor, with the latent heats of melting and vaporization providing the jumps in "consciousness," as measured by mobility. When chemical complexity gradually allowed a jump to biological complexity, further jumps took place among biological species, with the last jump being infusion of the soul that transformed apes into men with only minor genetic changes. Human conscience appeared at that moment, so that free will could influence further progress. After the Fall of Adam and Eve, God had to become Man in Jesus Christ to accomplish the next transformation. That jump would occur when a substantial part of the human race had accepted Christ's command to love our neighbor and acted upon it, so that we all became merged into each other's love. Then we would

be transformed into a new organism with a universal consciousness of love, while preserving our self-consciousness. This part of the human race would then be capable of bodily ascending into Heaven to be united with God for eternity, as represented by the Second Coming of Christ. Those who were unable to make this transformation would stay behind, severed from God for eternity, which is the state of Hell. Tielhard's ideas were still popular in l969, but they are discounted today.

On l March l969, I boarded a train going north from Bangkok toward the Laotian frontier. All day I looked at pastoral scenes of children riding water buffalo and farmers returning from their fields. Dawn on the next day broke over wild hill country that continued all the way to Lampang, where I left the train for a bus to Chiengmai. The bus went through dry, rugged uplands that were as heavily forested as a jungle, and crossed the divide into the Mekong River Valley. Dust hung in the air and covered the foliage, transforming distant hills into hazy shadows. I saw two elephants being herded down a side road. Three of us got off the bus when it came to a road junction, where we boarded a rickety bus to Chieng Khong, the border town on the Mekong River where I would pass over into Laos. After many stops at small towns, the bus arrived just before 6 PM. It was Sunday and Monday was a holiday. The immigration officer wouldn't stamp my passport, so I checked into the hotel ($l.50 with bath) and washed the dust out of my clothes.

The immigration officer kindly opened his office the next morning long enough to stamp my passport, and a boy took me across the Mekong River in a covered canoe (25 cents) to Ban Houei Sai, the frontier town in Laos. Monday must have been a Buddhist holiday, because immigration was closed there as well. A Laotian veterinarian who spoke English got me into a cheap Chinese hotel, and told me that the Tom Dooley Foundation had a hospital up on the hill. The vet had worked for USAID, but quit after one too many close calls. He was from the northern hill country, where he had to fly into remote villages infiltrated by the Pathet Lao. In one narrow escape, he was left for dead and had to rely on native people who took him in small canoes down Mekong tributary rivers to Ban Houei Sai.

An American technician from the Tom Dooley Hospital drove up to the hotel in a jeep. She was totally covered in dust. I asked if I could come up for a visit later on, and she said I could. In the meantime, I walked around town. As I crossed the river, the first thing I saw was a long staircase from the riverside street up the hillside to a Buddhist temple overlooking the town. I wanted a closer look. The front of the temple was decorated with pieces of multi-colored mirrors mounted in mosaic patterns in the mortar. Great scaly dragons slid down the wavy railings on the staircase to the street below. The street was the main business district. The police station was on a hilltop behind the center of town. On a higher hill to the east was an old walled fortress built by the French in colonial days. It was now a Laotian military fort. All houses in town were thatched, but the downtown business buildings were concrete.

I walked up the hill to the Tom Dooley Hospital in the afternoon and stayed for supper. It was in a state of disrepair because the medical staff was too busy. It consisted of only six people, two doctors (Joe Schwartz and Violet Juodakis), two nurses (Barbara Wells and Sister Calotta), and two technicians (Judy Angrove and Nancy Lynch). All were Americans but Lynch, who was Irish. Lynch and Wells had flown to Luang Prabang, the old royal capital of Laos, the day

before. All six were fed up with Laos. Uncle Sam spent $60 million here, the Pathet Lao could "take any city any time," certain Lao and Thai military men were getting rich off American aid programs, and the common people showed no gratitude. One Laotian walked miles to bring in his pregnant wife, whose baby was in the breech position. Dr. Schwartz saved the baby and, true to the highest precepts of the American Medical Association, had asked for payment. The man grudgingly gave him three coconuts. I asked him, "What did you expect?" He said, "I thought it was worth at least six coconuts." The general attitude, even among merchants, was, "Americans are rich. They don't need our money."

Schwartz once thought Communist aggression had to be stopped in southeast Asia, but now he said, "They can have it all. We should defend Singapore because of its strategic location, and Indonesia because of its resources, but they can have Burma, Thailand, Vietnam, Laos, Cambodia, the lot." I asked him if that would encourage the Russian and Chinese hawks, making World War III more likely. "Maybe," he said, "but this theory of Laos being a buffer state between Vietnam and Thailand is hogwash. The only reason they don't take Laos right now is because they don't want the problems of administering it." Schwartz had been a Navy doctor until l966, but he couldn't do surgery at the hospital because it wasn't properly equipped. Every challenging case was flown to Vientiane, and he was frustrated. They all were. Some Italians ran a Catholic mission school which teaches in French, and I wondered if they held the same opinions.

The next morning, I walked up to the police station to get my passport stamped and then went to Lao Air Lines to buy a ticket for the next flight to Luang Prabang. Back at the hotel, I visited with the daughter of the owners. Her father was Laotian, her mother was Chinese, she had four brothers, and she was sweet sixteen. She studied English at a school in Chiangmai, Thailand, but she liked math and science best. She had read a book by a black American who said whites considered blacks to be animals, and she asked me if that were true. She thought Americans were "very civilized" but I told her factories and moon rockets don't necessarily make people civilized. "When people can live together in respect and harmony, they are truly civilized. Do you think if your country had twelve percent black Africans, they would be accepted as equals?" She thought they would. "Then Laos would be more civilized than America." The mixed Malay, Chinese, and Indian population in Malaysia seemed to get along. We talked about her wishes for the future. I told her, "Humanity can be divided into those who use life and who are used by life. Some opportunities come to every person—even in a small village like Ban Houei Sai—and if you want to control your own future you must not be afraid to take these opportunities. Even if you fail, your life will be richer for having tried."

Her parents invited me to dinner. Two other guests were a Chinese doctor and a Laotian nurse. They hoped to work in the Tom Dooley Hospital, but at present their English was too poor. It was good enough for a pleasant chat. The Doctor was South Chinese and short, but he assured me that the North Chinese were very tall ("six feet, two meters"). I shared what I knew about the Han dynasty of South China and the Tang dynasty of North China. H. G. Wells stated in his Outline of History that the Tang Empire had extended to the Caspian Sea in the west at the time when the Roman Empire extended to the Caspian Sea in the east. I asked if any trade had taken place between the two empires during that period, and this led to a discussion of the Chinese and the Indo-European language groups. Then I commented on how rapidly the

Japanese had advanced in the last 50 years. He replied, “In China the Japanese are called ‘the Chinese of the Islands’.”

After dinner, I watched some school children play volleyball. They also play basketball. The schools, the police, and the military all have teams that play against each other. The army was also sponsoring a public dance for a “boun” (a fundraiser). I went up to the Tom Dooley Hospital and read a book, *Who Is Ayn Rand?*, until suppertime. All the Hospital staff were expected to attend the boun. Judy Angrove and I walked together on the way down. During her two years in the Peace Corps, she had worked with headhunters in Sarawak (Malaysian Borneo). “They are ordinary people like everyone else,” she said, but her term was up just as she was getting to understand their way of life. Then she wanted to work with Indians in Monument Valley, but bureaucratic red tape and poor pay discouraged her. She went to San Francisco, heard about the Tom Dooley Foundation, and joined it. Joe Schwartz joined us and the two of them told me how fed up they were with the Foundation. The board of directors is very prestigious (retired admirals, etc.), but it didn’t keep close watch on finances. “They meet once a year, hear the reports, attend a banquet, play a little golf, and go home,” Joe said. The Ban Houei Sai hospital operated on $700 a month and treated 80 people a day. Salaries were so low as to be almost voluntary. Even repairs and other unforeseen expenses must come out of the $700. Local people didn’t donate time or help in repairing or enlarging the hospital. Everything fell on the shoulders of these six people. They expected that the managers in San Francisco were either totally incompetent or had secret Swiss Bank Accounts. The Foundation operated only two hospitals. The other one was a showplace on an island in the Mekong River near the Cambodian border. It got more money but had fewer patients. Joe said, “The more I see of it, the more I am sure that the only outfits that really do something with their funds are religious groups—the only ones whose goal is really charity, and not to make a fast buck off the kind hearts of rich widows in Miami.”

About then we were joined by Joe Ryan, who was an Air Force pilot in Vietnam and now flew for Air America. He offered to expose the Dooley Foundation in court upon return to the States. We talked about telling Vance Packard or some other muckraker about it. “The Dooley Foundation has been equated with motherhood and apple pie,” Joe Schwartz said. Then Schwartz and Ryan began exchanging scuttlebutt from their Vietnam war days.

We were drinking in a little place run by a half Chinese-half American named Oscar. Oscar had a fabulous life. He was on the first American boat attacked by the Japanese in China during World War II. The skipper of the boat was the father of astronaut Lovell, whom Oscar knew as a three-year-old boy. Oscar was surprised to learn that Lovell had flown around the Moon. Being half Chinese, Oscar could go into any town with a Chinese community and get a loan to start a business. The “Oriental Jews” take care of their own. Ryan left without paying for any of the drinks, even though he made more money than any of the others. They all commented on it. They wanted to know about me, so I talked about my work in Antarctica, the origin of Ice Ages, continental drift, etc. We returned to the hospital after 11 PM, and they invited me to spend the night there.

I had wanted to take a canoe down the Mekong River from Ban Houei Sai to Luang Prabang. Joe Schwartz told me that one other American hitchhiker tried that, and about 60 miles

down-river he was stopped by villagers who sent him back. He couldn't even stay overnight in any villages. Villagers kept shuttling him upriver until he was back in Ban Houei Sai. Laotians are normally very friendly, so the villagers had to be afraid of reprisals by the Pathet Lao, who wanted no foreigners on that stretch of river. Since river travel was ruled out, I'd have to fly.

Four airlines served Ban Houei Sai; Royal Air Lao, Lao Airlines, Lao United Airlines (a cargo carrier), and Air America (the CIA's private airline). The "bus" to the airport was a pickup with seats and a top in back. Everyone was covered with gray dust when we arrived, and we all roared with laughter at our state. The waiting room was a thatched roof set up on poles. The runway was a cleared and graveled strip down a hillside. The airplane, a DC 3, arrived in a cloud of dust. Nancy Lynch and Barbara Wells, the two who had flown to Luang Prabang on Monday, got off. I knew right away which one was Nancy. With her red hair and blue eyes, she was obviously Irish. Her hair wouldn't be red for long! Violet was joining me, but she would continue on to Vientaine. She gave me letters to deliver to Major Thomas in Luang Prabang, saying, "He is 6 feet 7 inches, and the only man I ever felt small beside." Violet was a 5 foot 11 inch blond of Lithuanian descent. The takeoff and the flight were bumpy. We flew over rugged hill country with the only sign of human habitation being an occasional cleared hilltop or village. Lots of tigers roamed this country, I was told. As we rounded one rocky range, I saw the Mekong flowing south with high hills on the west bank and Luang Prabang nestled on a narrow plain on the east bank. It was an extremely picturesque location and reminded me of the fluid, wild mountain scenery depicted in Chinese and Japanese watercolor paintings.

Luang Prabang had only one hotel and Major Thomas was there, so I delivered Violet's letters. The Plain of Jars, a region north of Luang Prabang where large clay vessels were scattered about, fascinated me and I asked the major how to get there. He said no regular transportation went there because the Pathet Lao held the area. I asked him about going down the Mekong River to Vientiane, and mentioned that Joe Schwartz advised against it because of the Pathet Lao. He told me boats were going and said, "Don't try to force yourself on the captains if they hesitate to take you, because it means they think it will be unsafe for them to have an American aboard." One of the larger boats was leaving the next morning and I got permission from the captain, who looked like the rock 'n roll legend, Fats Domino. The fare was $7 and I could spend the night on the boat, which saved a $4 hotel bill. Back at the snack bar outside the hotel, I watched a funeral procession of three coffins with military escort. Were they Lao soldiers killed in clashes with the Pathet Lao or the Viet Minh? The Viet Minh were the Vietnamese Communist guerrillas who had defeated the French at Dien Bien Phu, and who now kept the Ho Chi Minh Trail open that was used to smuggle arms from North Vietnam to South Vietnam, and which ran along the mountainous Vietnam—Laotian border.

I followed the funeral procession to the cemetery, where the bodies in the coffins were burned on funeral pyres. A Christian cross marked one grave in the cemetery. Luang Prabang had many Buddhist temples, called Wats, but one old temple on a hilltop dominated the town. It was rundown, but had a golden "steeple" that provided a superb view in all directions. I wandered down to the boat after 6 PM and was surrounded by young boys wearing orange robes with one shoulder bare. That was the traditional attire of Buddhist monks and the boys were in training. They wanted to know who I was and where I came from. I drew a picture of the globe, showing the southern continents, and drew on it my route from Antarctica. One said, "Where you

sleep?" I think they wanted me to sleep in their Wat, but then a bell rang and they said, "We must go and pray to Buddha." I returned to the boat, where my bed on the floor in one of the cabins was ready.

The riverboat left Luang Prabang at 10 AM on 6 March l969, two hours late. The cargo was mostly empty barrels, which also served as supports for a tarpaulin under which most of the passengers stayed. The rest of us stayed in four or five cabins. Our boat was part of a convoy of three iron boats. Lots of smaller wooden boats were also on the river. The Mekong was fast and narrow as it flowed through very rugged hill country. The convoy stopped at night. The next day we went through the swiftest part of the Mekong between rock cliffs some 30 feet high. People lined the rocks where we went through whitewater rapids. They pulled boats upstream through the rapids, and they had to pull us upstream at one place because we had left behind a Japanese passenger at the overnight stop. He worked for the Japanese Peace Corps in Vientiane. He told me he had three months to learn French and Lao before he left Toyko. The captain had to wait for the morning fog to lift before he continued down river on the third day. The river was now wider and the country was less rugged, but still heavily forested. Everyone but the Japanese, Jyunji Kobashi, drank from a barrel that contained untreated Mekong River water. In the afternoon we tied up at a broad beach and most of us went swimming until the other two boats in the convoy and a third boat caught up with us. Barrels of aviation gasoline and bags of *Elephant* brand cement were piled on the beach. We all spent the night there. Most of our passengers had left the boat at village stops along the way. Few go all the way to Vientiane.

Mr. Kobashi (as he wanted to be called) was 35 and we got along well. We agreed that world peace would be fostered if people in the major cities who make peace or war decisions traveled around like us and get international views. Then he said the Japanese could not coexist with l2 percent blacks in their country, as the US has. He said the gasoline and cement were left on the beach by big boats so that smaller boats could deliver them to villages along tributary rivers. The forest was burning on a distant hill upriver, and Mr. Kobashi said rice would be planted there.

We left at 7 AM the next morning and passed through rapids before the river widened and became shallow again. A boatman sounded the river bottom with a bamboo pole in the shallow places, but around 1 PM we got stuck anyway. The boatmen, from 18 to 25 in age I guessed, jumped in the water with boards and tried to wedge the boat into deeper water. When that didn't work, the *Sithane*, another boat in our convoy, came up and tried to pull us with a chain. It kept breaking, so some boatmen went to a village and came back with a huge coil of thick rope made of woven vines to replace the chain. It worked. But, drifting downstream, we got stuck on the bottom again and this time the rope of vines broke several times before we were freed. It took all afternoon but the boatmen loved it. They splashed in the water laughing like children throughout. By now Thailand was on the west bank of the river. We tied up for the night at a village on the Laotian side, which was "a long day in a canoe" from Vientiane, according to the locals. Mr. Kobashi and I walked through the village. It was the administrative center for that district, but except for a basketball court with concrete floors and some stores protected by iron cages in front, there was no sign of the twentieth century. The Thai town across the river had electricity, plumbing, and other modern conveniences.

Pigs and chickens roam free in Lao villages, so vegetable gardens have to be fenced in. Lao houses are up on poles about four feet high to keep out bugs and to keep them dry in the rainy season. Mr. Kobashi and I ate “fur” in the only restaurant that was open. It is a tasty broth with rice sprouts, noodles, a green plant like onion tips, and bits of water buffalo. Sugar and various sauces can be added for the individual taste. Fur is the staple for most Laotians. After supper we met a French geologist who was looking for copper. He was impressed by how friendly the Laotians were.

Our boat continued downriver at 8 AM the next day and it soon passed through yet another stretch of rapids between narrow banks of black rock. Fishermen worked the shoals with nets. Once, we had to go back upriver to transfer gasoline to the *Sithane*, which had run out of fuel. By late afternoon, the Mekong had become much wider and we stopped at a village to unload bottles of soda pop. A very feminine Thai girl came across the river with noodle soup to sell at the booths where boatmen bought soda pop. After we left, the convoy had to thread its way along the deep part of the river channel where the Mekong was wide and shallow. Two got through, but the *Sithane* got stuck and we returned to free it. By then it was 5 PM, so stopped for the night at a military checkpoint in a small village ten miles from Vientiane. The army compound at the edge of the village was surrounded by a wide strip filled with sharpened bamboo shafts called “punji sticks” that were stuck in the ground at an angle of 45 degrees to repel the Pathet Lao. A barbed wire fence was just inside the barricade of punji sticks. A rough road led to Vientiane. I saw boys in the orange robes of Buddhist monks, but there was no temple.

Mr. Kobashi and I visited until midnight. I floated my theory to explain why Chinese technology lagged so far behind the West, after getting an early head start. I thought it could be explained by the difficulty in expressing abstract concepts using 600,000 Chinese characters that represented pictures, instead of using an alphabet of 26 or so letters that were based on sounds. How do you make a picture of an electron? Such concepts could only be spread by the spoken word in China. How would you like to learn calculus by word of mouth? With the Western alphabet and number system, each generation could begin where the greatest minds of the last generation left off, so higher plateaus of technology were attained with successive generations. That didn’t happen in China because, when the greatest abstract thinkers in one generation died, they stopped speaking and their thoughts couldn’t be expressed by Chinese characters for the next generation. That’s why China sent its brightest students to Western universities. Mr. Kobashi was very polite. He let me blither on without arguing.

Vientiane was the administrative capital of Laos (Luang Prabang had been the royal capital). We arrived at 10 AM on 11 March l969. I checked into the Sayfa Hotel and, when I finished laundering and showering, it was noon and everything was closed until 2:30. Before I could take southbound busses to the Cambodian frontier, I needed a laissez-passer from the police station. Before I could get a visa to enter Cambodia, I needed to show an airline ticket out. Mr. Kobashi took me to the very imposing police station, the bank, a travel agency, and the Cambodian embassy, where I produced an Air Vietnam ticket from Pnom Penh to Bangkok. It was all done in two hours. Then there was time for sightseeing. I got a magnificent view of the city from a new edifice similar to the *Arc de Triomphe* in Paris, but with a Buddhist motif. Stairways at each corner took people to the top, where viewing was from three stacked terraces,

like a Mayan pyramid. All major avenues radiated from it, but there was only one traffic light. A new Buddhist temple was being constructed in concrete. Vientiane was a small city, but the British had an information service, the French had a cultural center, and the Americans were adding a library to their cultural center. At least some of our $60 million in annual aid was going to modernize and beautify the city.

I was up at 4 AM and took a taxi to the bus terminal on the edge of town. The bus left at 7:30. Being early, I had a seat in front with a clear view out the windshield for taking pictures. Seats behind were spaced for people with Oriental stature, so I also had leg room. The bus was packed solid and it was stopped often at military checkpoints. Fortifications were all along the road, and consisted of log pill boxes and foxholes connected by trenches inside a cleared area that was surrounded by a phalanx of punji sticks arrayed in three tiers on a sloping earthen embankment. Both ends of bridges were similarly fortified. The rivers all fed into the Mekong, and the road followed a narrow corridor between the Mekong River and rugged hill country infested with Pathet Lao. The road was gravel, after a few miles of asphalt near Vientiane, and it passed through dense jungle that covered everything as far as the eye could see. We met logging trucks loaded with huge logs all day. Ferries consisting of boards laid over four of five pontoons, all powered and guided by a single outboard motor, carried our bus across two rivers.

At Thakhat we boarded a much smaller bus to Savannakhet. It was ferried across a third river and passed an abandoned French mining complex. Along the road we saw many charcoal ovens that looked like igloos, were made of clay, and were covered by grass roofs supported on poles. At the lunch stop, I had tea, rice, fish soup, and a strong ground-meat green-leaf dish that Laotians call “Tiger’s Food.” Two of the passengers were army men. One had been taught military tactics in Kentucky at Fort Knox. We arrived in Savannakhet around 7 PM. He and I had Chinese soup in the open market. Then he directed a trishaw (rickshaw) driver to take me to a (Chinese?) hotel costing 500 kips per night. I was told that busses weren’t going to Pakse, near the Cambodian border, due to Pathet Lao activity.

At 7 AM, a man who spoke English took me to the bus station. He found the driver of a small bus who was going to Pakse, and asked if he would take me. The driver became very excited, mimicked a man firing a machine gun, and said the Pathet Lao would kill everyone on the bus if one was a white man. I asked my interpreter if boats went down the Mekong to Pakse, but he said none did and I should fly there. On my way to an airline office, I passed some men playing a Laotian wind instrument consisting of a bundle of hollow wooden tubes of different lengths and sounding like a combined harpsichord and pipe organ. At the office, I met a Frenchman who had four trucks that were taking rolls of military barbed wire to Pakse. Yesterday his truck had been turned back by the military on the road because he didn’t have his passport and visa, but they let the three trucks driven by Laotians pass. He learned by radio that those trucks hadn’t arrived in Pakse, and that two trucks had been seen burning on the road. Were they his? Then an Englishman traveling by Land Rover from Cambodia and Pakse arrived at noon, and told the Frenchman that he had been stopped 63 kilometers north of Pakse by a band of Viet Minh and some Pathet Lao. They had captured three trucks and they detained him for 2 or 3 hours before letting him pass when they confirmed that he worked for the OAS. The Frenchman told me this was much more serious, because the Viet Minh were more ruthless and they could use his trucks on the Ho Chi Minh Trail. Their elephants pulled broken-down trucks

on the road up to the mountain trails. Also, they would kill his Laotian drivers, but Pathet Lao communists wouldn't because they needed support from the local Laotians. The Laotian driver of the Frenchman's truck had been tight-wrapped to a tree with military barbed wire (razorwire) in the truck, and was dying slowly, while an elephant was pulling the truck up the mountainside.

The Frenchman said he would take his truck south when he heard that his other three trucks had been released, and he would take me if I could pass as French or German. I said, "I have a Youth Hostel card with my photo which is printed in German because I got it in Berlin. It can pass as an identity card." I showed it to him. "It is enough," he said. "Be here at 7 AM tomorrow. I will leave then." At 5 PM word arrived that a search of Pakse and an airplane search of the road into Pakse revealed no sign of the trucks.

Then I left too. Back downtown, a Buddhist monk of 19 invited me to spend the night in his Wat, which is a dormitory for young Buddhist monks. At about age 10, boys are "ordered" to study Buddhism as monks until age 25, when they decide if they want to "take off the robe" and return to society. The youthful monk was very eager to visit with me because he was determined to visit America. All of the other young monks gathered to listen in.

A teacher arrived who had saved $300 and had friends in America. I said he had to have an American sponsor who would assume financial responsibility for them. They would have to fly, which was very expensive. I recommended going overland to Europe instead, which was very cheap if they traveled like the hitchhikers who often stayed at Wats. (1) Never pay money for a hotel if you can sleep in a temple, a park, at a police station, or on the beach. If you must have a hotel, find the cheapest one. (2) Never pay money for public transportation if you can catch a ride by thumb. If you must take a train, travel fourth class. (3) Never eat in a café or restaurant if you can buy food in the native market. If you must eat in a café, buy the cheapest thing. (4) Always carry travelers' checks. Keep the numbers in two or three places so you have them in case you lose the checks. (5) When you change money, never change more than you can afford to lose. (6) Learn English well. It is the closest thing to an international language. (7) Make a short trip first, perhaps to Singapore. You will make many mistakes and it is best to learn from them on a short trip. He wouldn't listen. He wanted to see America.

When he left, I told the nineteen-year-old monk, "You need four things to travel. First, money, and in travelers checks which are international and replaceable. Second, communication, which means English because it is international. Third, knowledge, which means keep inviting travelers to your Wat and ask them how they travel with very little money. Fourth, experience, which means you must ask one of these hitchhikers if you can travel with him so you can learn from what he does." By then it was 10 PM, and the boy took me to a bed with mosquito netting for the night.

The next morning I went to the USAID motor pool, where the Frenchman had left his truck. He was already there and knew that his other trucks were still missing. He wanted to drive to Pakse anyway, but he didn't have his passport and visa so he knew he would be turned back by the military if they stopped his truck. I offered to drive his truck to Pakse because I had a passport and visa, but he decided to drive to Vientiane and get his own. My Thailand visa allowed multiple entries, so I decided to cross the Mekong River at Savannakhet, travel south on

the Thai side of the river, and re-enter Laos at Pakse, thereby bypassing the dangerous area. I found the chief of immigration at the waterfront, he wrote “via Thailand to Pakse” over the visa stamp in my passport, and I took the ferry boat (10 Baht, or 50 cents) to the Thai village across the Mekong. Twenty minutes later, I boarded a bus to Gubon. The road was paved and the towns were newer and more prosperous on the Thai side. At Gubon, I discovered that I had to get my passport stamped at Phiboun, the capital of the district, before I could cross the Mekong to Pakse. I took a bus to Phiboun (5 Baht for 40 kilometers). I met a lad in Phiboun who took me to a hotel. Rooms were 25 Baht with a fan and l5 Baht without. I took one without, opened the window to let in the breeze, and said to the boy, “A very good fan.” We laughed. I commented on the beauty of the local girls and he asked if I wanted one. I told him that a man named Kobashi told me that Lao and rural Thai girls are bought for brides, so they should be seduced with words, otherwise they will be insulted with what they think is too little money to buy a bride.

The next morning, I met a lad named Viroj Bundasukdi who spoke English and agreed to be my guide. He took me to the district officer, who stamped my passport. It was Sunday and nothing was going to Pakse. The doctor in Phiboun, age 35, had just married a 2l-year-old beauty, and we were invited to the wedding banquet. I sat at a table of teachers who taught English and allowed myself to be stuffed like a Christmas goose. Then we went to a pretty Buddhist temple and a “waterfall” or rapids on the Moon River, where people were bathing, washing clothes, or just relaxing. From there, Viroj took me to a cock fight, my first. The cocks didn’t wear spurs but the fight was bloody enough. The winner was a beat-up looking old bird, but tougher than hell! Then Viroj took me to the home of his teacher, Mr. Utan Salibuth. We had an enjoyable visit and when I left he gave me a rice container with a bowl-lid that was made in Chengmai from strips of bamboo that were woven in the pattern of that district. Now my wife has it. Viroj took me to an old temple with stone beasts guarding the entrance, a mill where rice was separated from chaff and bagged, and the open-air market, before taking me back to the hotel. I told him it was a superb tour.

I had completed one notebook of my travel diary, so I went to the post office at 8 AM and sent it and the rice container to Paw in South Dakota, with a note that this was sent on Saint Patrick’s Day. Then I went to the police station and caught a ride with trucks taking cement to Pakse. I heard shots in woods at the border, but the border guards let us pass anyway. The Thai town on the west bank of the Mekong opposite Pakse was Muang Khao. I crossed on the truck ferry and got my passport stamped by the police commissioner, just as the noon siesta was beginning. Khinak was the last town before the Cambodian border and the bus left at 3 PM, after the siesta. As we were leaving, I saw a taxi run over a dog. It died like a dog. The distance in kilometers along Laotian roads was marked on concrete posts spaced one kilometer apart. The Khinak bus stopped at many police barriers for the first ten kilometers, and pretty girls would then sell food and beverages to the bus passengers. I ordered iced tea, but the girl wouldn’t let me pay her (all of two cents). The road was narrow and paved, but the bus was slow. We passed through a logged second-growth forest and arrived in Khinak just after dark. There was no hotel, so I spent the night on the porch of the police station. It was just a thin frame shack put up on posts in the usual Laotian manner.

Before 7 AM I was up and washing myself in the Mekong River. The other Tom Dooley

Hospital was on the nearby island. I put on my white shirt and slacks, since I was told that hitchhikers looking like bums couldn't enter Cambodia even if they had a visa. A lad told me he would drive me to Stung Treng, the first town in Cambodia, for $20. It was 53 miles away, so I said I'd pay him half now and half on arrival. When we got to the border crossing an hour later, the guards wouldn't let him cross. I waited until a family of four in a jeep arrived on the other side, and gave them the second $l0 to take me to Stung Treng. It was on the west bank of the Mekong. We arrived around 2 PM, after crossing the river on a ferry. I went to the customs office and got my passport stamped with no problems, but an Austrian hitchhiker who looked like a bum was there, and he couldn't get his passport stamped. He was Herbert Leitner and I had met him in Vientiane when we both applied for Cambodian visas. He had spent two days trying to cross into Cambodia, and had been given all kinds of hassles. That's the down side of dirt-cheap travel by hitchhiking. He told me that he had decided to stop eating and drinking until he got sick, so they would *have to* take him to Pnom Penh. I talked to the immigration officer and got his passport stamped.

All the bridges from Khinack to Stung Trengh had been partly destroyed by explosives. When I was in Phiboun on Sunday, Herb was going from Savannakhet to Pakse with no trouble. However, he had spent one night at a tacky Catholic mission where the priest showed him bullet holes in the wall and other damage where the Viet Minh had fired machine guns and thrown hand grenades. The Frenchman had told me Germans were allowed to pass, and I suppose German-speaking Austrians were as well.

Hitchhikers were everywhere in small numbers. They were all young, destitute, and had some kind of "student" identification that got them cheaper prices when they couldn't avoid paying. Herb was a real operator, the hitchhiker par excellence. He conned a table of Cambodians at a Chinese restaurant to invite us to their banquet. They were truck drivers and they offered to take us to Phom Penh for free. I thought the river boat would be more interesting, and convinced Herb.

Herb and I spent the night in a Buddhist Wat. Herb was on a three-month vacation, after spending 2l months with Australians who were spraying the jungles of New Guinea with DDT to combat malaria. He got to travel by river boat and jungle trails between villages, each of which constituted almost a separate tribe because of the isolation that led to 400 dialects. Each tribe thought its village was the center of the universe, and considered whites to be inferior because they couldn't speak the tribal dialect. Herb said any show of kindness made them aggressive, so his initial compassion for them turned into hatred. This was the opposite of what the American girl who had worked with similar people (headhunters) in Borneo told me. She got to liking them more, the better she knew them. Herb wanted to go to South Africa because a German friend had lived there and raved about the place. He had no problem with apartheid. There is a certain kind of German or Austrian who can look the other way while Hitler turns six million Jews into soap. Herb's German friend suggested that he travel to South Africa for almost nothing "to prove he can do it," challenging his manhood, resourcefulness, or some such thing. In my travels, I have observed that people who travel this way become petty and so money-conscious that it obsesses them. I have noticed it in myself when I spend too much time with them. Often as not, they get sick and end up spending what they saved for hospital and drug treatments.

Herb had diarrhea the next morning, but he decided to come with me on the boat to Pnom Penh anyway. The young monks were lifting buckets of concrete up to the roof of the Wat, using a rope from a winch at the bottom to a pulley at the top. I took the rope and pulled up three buckets of concrete without the winch. They thought that would be faster, but it took six of them to do it so they went back to the four-man winch. The boat to Pnom Penh looked like the one I took on the upper Amazon from Iquitos to Pucallpa, only it had two decks, the top for people and the bottom for cargo. Three boats were leaving an hour apart. Ours left at noon. People were watching us and a boy handed me a note with writing in English, French, and Khmir (the Cambodian language). The English read, "America to get out of my Cambodia." Herb grabbed the boy's forelock and said, "Did you write this?" The boy said "No! No!" and ran off. Everyone stared at us for the next hour. "I'm going to have to do something about this," Herb said. He reached into his bag, pulled out a bottle of Cologne and some nylon hose, and began peddling them to the crowd. Instantly we were surrounded by smiling people sniffing the Cologne and feeling the nylons. He sold the Cologne for 40 Rhials and the hose for 50 Rhials, and changed the atmosphere on the boat.

The Mekong was very wide and the current was weak. Around 8 PM we passed into a great swarm of insects that completely engulfed the boat. They flowed around the sides like a strong current. Hordes danced around every light bulb in a living ball several yards in diameter, flying in dizzying orbits like electrons around a nucleus, so fast that the traces of flight were visible but not the insects. They only quieted down when the lights were extinguished.

We arrived in Pnom Penh as dawn was breaking and spent the day sightseeing. Prince Norodom Sihanouk still ruled Cambodia at the time, but it wouldn't be long before he would be deposed by the Khmer Rouge (Cambodian Communists) and the killing fields would become drenched in blood. Herb and I saw the royal barge, the royal palace, and the royal elephants. One was gigantic. He had enormous tusks, long and sweeping. He must have been ancient, as his skin had sunk deep into the cavities of his skull. Pnom Penh was a delight. The avenues were wide and clean, the shops were tidy, and everything had a comfortable settled, and civilized air, reflecting the French influence. Apartments were well kept and had wrought iron balconies adorned with potted plants and flowers. By day's end, Herb's upset stomach had left him too weak to look for a free night's lodging at a Wat, so he violated his principle of never paying for lodging and we stayed in a hotel.

Herb talked more of his New Guinea experiences. He said primitive people had to be treated with consideration, fairness, and discipline because they were like children. Parents would complain if their children got medical attention before they did. After spawning, fish came down the Sepik River so thick the river couldn't contain them all. He smoked some to eat when fish were scarce, and recommended that they do too. They didn't. When that time came, they wanted his smoked fish. He found a former police officer who was almost dead with fever where his own people had trussed him up in a hammock and left him to die after he broke his leg. He didn't like Aussies either. "Germans who are in Australia five years aren't Germans anymore. They think like Australians and become lazy." A few years later, I would be in New Guinea taking a canoe 300 miles down the Sepik River, stopping at villages on the way, and forming my own opinions.

The next morning, 2l March l969, we rented bicycles and rode to Angkor, where we spent the day exploring Angkor Wat. It was fantastic! Angkor Wat covered several acres, and everything was made of dark stones. A broad moat lay between an outer wall and a central temple, which had three levels similar to those of Mayan pyramids. A wide causeway crossed the moat from the midpoint of one wall to the temple, where it joined a promenade around the base of the temple. From each side of the promenade, a flight of stairs led to each of the three levels. Archways on each level opened into galleries in the heart of the temple. All of the walls were embossed with Hindu deities. A high central tower and two flanking towers crowned the top level. Many Wats were scattered around Angkor. Angkor Thom was even bigger than Angkor Wat, but not as elaborate nor as well preserved. We were invited inside one Wat to view the body of a much-revered monk. It was wrapped in a shroud. His picture and some medals he had been awarded were on display. A coffin was brought into the Wat and the body was placed inside. I was told that the coffin and body would not be burned until three years had passed. That evening, fireworks announced a performance by Khmer dancers in native costumes for tourists willing to part with l80 Rhials ($3). It was worth every Rhial, a "Rhially good" show!

Herb and I split up the next day, as there was much to see and we wanted to take our own time seeing it. Busloads of Japanese students and teachers were swarming over everything. I met two people from Minneapolis, Pat Raferty and Karen Wong. They worked for Northwest Orient Airlines, Pat as a pilot and Karen as a stewardess. I told her I grew up in South Dakota, just west of Minnesota. She asked, "What town?" I said, "It was a little town you probably never heard of: Fort Pierre." "Oh? Do you know Bill Fischer?" That blew my mind. Bill and I grew up there and graduated together. What were the odds against two people who knew Bill Fischer from Fort Pierre meeting in Angkor Wat just before the Khmer Rouge took over and ended tourism? Karen had been the bridesmaid at Bill's wedding to her roommate, Jennell, who had also been a Northwest Orient stewardess. Herb and I joined up back at the Wat where we were staying, and we played with the children until the monks invited us in for supper. We ate rice, fish, meat, and vegetable sauces, with the dead monk laid out in his coffin behind us. We left shortly after prayer services began.

We left Angkor the next day, 23 March l969, and returned to Siam Riap. Then we caught a bus to Sisophon. Buddhists ride in the front of busses, so we were asked to move when a monk 26 years old got on. Herb told him we were tourists and we needed the front view for pictures, so the monk moved back. Then Herb told the driver he had no money, but I would pay 30 Rhials of the 50 Rhial fare. The driver agreed. Herb had more Rhials than I did, and he later gave me 30 Rhials. He had lied and cheated to save 20 Rhials (40 cents). He was 35, and used an old student ID card to get student discounts. I was no better, as I had used an old student card on occasion. It was late when we arrived at Sisophon, and we were told we could sleep in the police station.

I awoke just as the 4:30 AM bus to Poipet was arriving. Mosquitoes kept me from sleeping soundly, but Herb was sound asleep in his sleeping bag inside his mosquito tent. I woke him but he couldn't pack in time to catch the bus. I cleared immigration at Poipet, walked across the border into Thailand, cleared Thai immigration, and caught a ramshackle bus to the nearest town. I changed busses twice more before reaching Bangkok, where I checked in to the Thai Song Creet Hotel. That completed the circuit through Laos and Cambodia that began almost exactly one month earlier. A cute whore entered my bedroom and tried to interest me in her

charms. I placed her on the palm of my hand, deposited her gently in the hallway, and went to see John Wayne in *The Hellfighters*.

The next day I tried to get a refund on the Vietnam Airlines ticket from Pnom Penh to Bangkok that I needed in order to get the Cambodian visa. I was told that tickets bought for that purpose were not refundable. I pounded the counter, said I paid $2500 yearly to Uncle Sam in taxes, he spent $30 billion every year out of a $l20 billion budget to keep Vietnam from going Communist, so one-fourth of my $2500 went to Vietnam. That meant I was spending over $600 every year to keep Vietnam Air flying and I wanted my refund. The agent said he would send a telex to Vientiane, where I bought the ticket. Then I went to the Burmese embassy for a visa and got a ticket on United Burma Airlines, which is the only way a foreigner can see Rangoon. I met Herb back at the hotel. He had been only an hour behind me and took busses to Bangkok without paying anything. We went to see the movie, *Oliver*, and he didn't even pay the city bus fare (one cent). The ticket taker came to me, expecting me to pay for Herb. It was embarrassing.

In the morning, I got my Vietnam Airlines ticket refunded and took a limousine to the airport for the afternoon flight to Rangoon. Several hitchhikers were there who were going to Calcutta via Rangoon. One young Englishman, his Australian wife, and their child were absolutely filthy. He was skin and bones, and wore short shorts and a flimsy shirt. She was voluptuously plump and was wearing a yellow dress that hadn't been washed in ages. The child was a miniature copy of her mother, apple cheeked and cute as hell. Apart from their squalor, they were delightful and we ended up traveling together through much of India. Burma was run by the Revolutionary Government, which was proto-Communist, so everything was arranged when we landed. Our tickets included room and board at the Strand Hotel, a relic of British imperialism and obviously the best hotel in Rangoon. The Filthy Family and other grubby hitchhikers were told there were no rooms for them and they were taken to a dive that I dubbed the Burma Song Creet. Supper at the Strand was excellent and well-served. A small group of musicians provided dining music. We travelers dined in a separate room from the natives, just as in Russia. My room had two beds, an air-conditioner, a ceiling fan, bath, and shower. Several rooms were vacant, so the "no room in the inn" story was just to keep the filthiest and most bedraggled hitchhikers out.

My reason for visiting Rangoon was to see the Shwe Dagon Pagoda, one of the world's largest and said to contain relics of all the four acknowledged Buddhas. It must be classed among the great religious edifices of the world. I visited it the next day, thinking it was Sunday and berating myself for visiting a pagan monument instead of trying to find a Catholic church. The Shwe Dagon Pagoda was one of many in a large cemetery, but it soared above all the others and blazed in the sun, being 368 feet high and entirely sheathed in gold. I was relieved to discover that the day, 27 March l969, was a Thursday. I had also harbored a hope of going "on the road to Mandalay, where the flying fishes play, and the dawn comes up like thunder from China 'cross the bay." Mandalay was in central Burma, about two days by bus or train north of Rangoon, and I was curious how one could see either China or "the bay" from there. My air ticket allowed only one day in Rangoon, and I could not get an extension, so that mystery remains to be solved. I settled for a glimpse of Indira Gandhi, President of India, who had arrived in Rangoon on a state visit. My United Burma Airlines flight arrived in Calcutta after dark and we were taken to the Modern Lodge Hotel, a real dive but only four rupees (40 cents) a bed.

I got my introduction to Calcutta the next morning. Walking on my way to the Nepalese embassy to get a visa, I saw my first sacred cow and, as a naked ball of writhing flesh crawled by, my first crippled beggar. Several of the hitchhikers on the plane were at the embassy to get visas, including The Filthy Family. Two Australian women also came in, one with a bullhorn voice and flaming red hair that reminded me of Florence Hughes, wife of my Godfather and uncle, Felan T. Hughes, South Dakota rancher retired to Arizona, and now a Ghost Rider in the Sky. I joined them to tour the sites of Calcutta. The other Aussie had lived in Calcutta for years, and had given Mia Farrow a lift when she was hitchhiking in south India. Mia thought India was "wonderful, not a racetrack." We saw the Jain Temple (the Hindu sect that won't harm a fly), the Black Hole of Calcutta, the native market, the old British financial district, the Victoria Palace, the big steel suspension bridge over the Ganges, and Railroad Terminal (where carriages that look like old stagecoaches from the American west line up to take passengers). Then we dined at a vegetarian restaurant. Then I caught the 10 PM train to Raxaul, on the Nepalese frontier.

The train crossed the Ganges River shortly after I awoke on the next morning, and crossed flat rice-growing country all day. It was dry, but trees were abundant. Rains come with the Monsoons. Several of the hitchhikers were on the train. We all changed trains twice and arrived in Raxaul on a narrow-gauge train at 11 PM. Despite the late hour, we cleared Indian and Nepalese customs, and took horse-drawn buggies and rickshaws to a flophouse hotel in Birganj, the border town in Nepal. I spent the night fighting loose bowels and buzzing mosquitoes.

By 8 AM we were on our way to Katmandu in a German-made bus with a sign over the driver ordering, "*Nicht mit dem Wagenfuehrer sprechen!*" (Don't speak with the bus driver!). A caravan of four busses was making the trip on a road that was surfaced all the way, but wide enough for only one vehicle. It was a great engineering feat and road gangs kept it in continuous repair. The scenery was beyond description. After climbing for four hours straight, we crossed one great range at 8000 feet and got a view of Mount Everest and the High Himalayas as the bus wound itself down the north wall. The peaks lay behind and beyond the Valley of Katmandu, which was spread out far below at our feet. The lofty gleaming summits seemed to be suspended in the air like ragged white clouds because a pall of haze separated them from the horizon of the valley. Though we were at 8000 feet, the High Himalayas towered above us 20,000 feet and more overhead. They didn't seem part of the same landscape, more tooled to the giant outer planets like Jupiter and Saturn than to this fragment called Earth. After descending for hours, we rounded one of the endless turns and there before us was a broad green valley of terraced rice fields, with the range we had just crossed tumbling down to form the south wall and the north horizon vanishing into the Himalayan haze. We had entered the Valley of Katmandu. Our bus wandered through verdant fields for perhaps another hour, and then we came upon Katmandu, a fantastic city of jangling bazaars and temples with multi-tiered tile roofs in the Chinese style. Most of us took the free rickshaws to Camp Hotel, which was the main gathering point of the international hitchhiking crowd. The Camp Restaurant had American food, Nepalese style, which was a welcome change from the Asian staple of rice and thin soup I had been living on for weeks. For 5 rupees a night each, I and a Canadian hitchhiker on my bus shared a whitewashed room with wall-to-wall woven mats on the floor. We washed and laundered and hit the hay.

President Eisenhower had died, so the next morning I went to the American Information Center to watch a memorial film. Then I relaxed and did some idle sightseeing. My Canadian

roommate and I went touring in earnest on the following day. We rented bicycles and pedaled to the Golden Temple, where Hindus bathed in a “sacred” river that flowed into the Ganges and funeral pyres smoked on the terraced river banks. We couldn’t enter the temple, but I saw a big gilded “sacred bull” through the gate. Then we biked to Petan, three miles from Katmandu, where we saw more temples and curio shops that sold goods brought out of Tibet by refugees. I should have taken a picture of a puppy devouring, with great relish, a long human turd that was lying in the gutter of one street. I could have included it in a slide show, and flashed it onto the screen with no comment, before going on to the next slide. We split up after returning to Katmandu, and I went alone to the Monkey Temple, which had a square cupola with pairs of Oriental eyes painted on each of the four sides, and panhandling monkeys everywhere. Then I went to the Peace Corps center, where the Canadian and The Filthy Family were getting free hepatitis shots (she was still wearing the same dirty yellow dress). We went to the Chinese cultural exhibit to look at photographs of smiling Chinese and The Smiling Mao, in contrast to the tales of torture and slaughter coming out of Tibet with the refugees.

I missed the morning bus on 2 April l969 and caught a ride back to Birganj in the back of a truck with a dozen others. The man next to me got sick and puked over everything. It was after 6 PM when we arrived in Birganj, after a miserable trip. I crossed the frontier in a horse-drawn cart and took the 9 PM overnight train from Raxaul to Mahendru Ghat, where I boarded a sidewheel riverboat at the crack of dawn. It took me across the Ganges to a train that took me 8 kilometers to Danpur. There I got student-concession train tickets (shame on me) to Benares, Agra, and New Delhi. I spent the night in Benares at the Government Tourist Bungalow.

Benares was a sight to see. It is the Hindu holy city on the holy river. Early in the morning, I hired a boat that took me up and down the Ganges to see the ghats, or terraces. People washed their bodies and their clothing at the bathing ghats. Clothes were washed without soap, swung against rocks, and laid to dry on the terraces, making a colorful crazy-quilt pattern. Hindu strongmen exercised by doing pushups and swinging a large stone mounted on a stick, first two handed and then one handed, alternating rapidly from hand to hand. Bodies were cremated at the burning ghats. Workers brought wood down to the funeral pyres while the bodies were anointed with Ganges water. Then the bodies were put on the wooden pyres, a fire was lit, and attendants with long forks turned the bodies until they were reduced to ashes. (Saint Lawrence was roasted alive in this way. At one point he said, “I’m done on this side. Turn me over and eat.”) After the fire died out, the ashes were swept into the Ganges, where untouchables sifted the ashes with wicker baskets, looking for gold from rings or teeth. The scene on the river front held my interest for hours. Steps from the various ghats came down to the very water’s edge and on below. Terraces broke the long flights of steps up to the various Hindu temples and palaces, which rose in tiers up the steep river bank. A palace in Nepalese style was owned by a Nepalese prince. Other palaces were owned by rich merchants or Indian maharajahs. Each was architecturally unique, but they combined to give a chaotic unity to the whole riverfront for miles. With that impressive backdrop, the worshippers carried on their activities with infinite variety. Big woven umbrellas looking like giant mushrooms distinguished the crowd at one ghat, while noisy youngsters splashing in the water drew attention to another ghat nearby. Hindu holy men in orange robes and long beards volunteered for photographs at another, while a clutter of houseboats and canoes were tied up alongside yet another.

An American couple joined me in sightseeing. After leaving the ghats, we walked through narrow streets where brass water cans, silver ankle bracelets, sandals, and silk saris were among the things sold in cluttered shops. The more expensive saris had gold electroplated onto the silk thread, which was then woven into intricate designs. We visited a white mosque, where a Moslem woman wore a white sheet with only eyeholes to see through, making her look like a spook. We went to the Golden Temple, but weren't allowed to enter. A boy followed us and kept shouting, "This way to see the Monkey Temple!" Finally, the American woman turned on him and screamed, "Look! I don't give a damn about the Monkey Temple!"

I took the overnight train to Agra and arrived in the morning of 4 April l969. The Taj Mahal was visible for miles as the train approached the city. I took a rickshaw to see this magnificent mausoleum built by a Moslem prince as a tomb for his beloved wife. It surpassed Angkor Wat and the Shwe Dagon pagoda as a wonder of the Oriental world. The white marble looked new, the symmetry of proportion was perfect, and the scale was grand. But the unexpected treat for me was the great detail and craftsmanship of semiprecious stones set in mosaic floral patterns and designs inside the burial chamber and on the sarcophagus. Shops sold miniature Taj Mahals made of chalk and alabaster, but I wanted one in ivory for my friend, Jim Patraw, in Wisconsin. Another rickshaw driver offered to take me to a factory that made marble miniatures. I told him my rickshaw driver was taking me to see the Red Fort, about two kilometers away, and then he could take me to the factory. He didn't like that, and he yelled at my driver and tried to sideswipe our rickshaw with his. Finally, I had my driver stop, I got off, grabbed the other rickshaw (with the other driver on it), and threw it off the road. Then we continued to the Red Fort unmolested.

The Red Fort was a huge castle-like structure complete with moat, battlements, and bats. It was built with red stones (I took too many pictures). When I threw the rickshaw and driver off the road, my pants got torn and a young Hindu man at the fort looked at my shabby state and said, "Why do you abuse yourself so?" The other rickshaw driver was waiting when I came out of the fort, so I told him I needed new pants and a new shirt before I went to the factory. He took me to the bazaar, where I tried on various shirts and pants, none of which fit, much to the amusement of the crowd that invariably gathers in the Third World whenever I try to do something that involves my size. I finally found pants that fit. In this shopping spree, I also bought a silk purse for Josie Kelley, my aunt in Pierre, South Dakota, and a silk scarf for whomever. God caught up with me in Agra. My "student" train ticket had me leaving at the wrong station for the train to New Delhi, so I had to take the mail train with my ticket. It was very slow, very crowded, had only third-class cars, stopped at every two-bit flea trap, and was generally quite miserable.

It arrived in New Delhi at 7 AM on Easter Sunday, 6 March l969. I checked into a dollar-per-night hotel near the train station and walked several miles to the Catholic cathedral. The Bishop of Delhi, an Indian, was dedicating a new Catholic center, saying, "It is most appropriate to be laying the cornerstone of this structure on this day which commemorates the resurrection of the cornerstone of our faith, Jesus Christ." I examined my conscience while I waited for the next Mass at 5 PM in Hindi, and I realized that I was a counterfeit Christian. Reading Matthew 25, I remembered all the suffering I had seen; the mothers with their babies who showed me dried paps and I walked away; the shoeshine man in rags, too proud to beg, who beseeched me as I

walked away; the old woman in Benares with one eye, no ears, no nose—just a hole in the face—who ran at me screaming as I turned away; the poor, the maimed, the halt, and the blind who paraded before my eyes over 5000 miles since Singapore; and I walked on without pity. On this day of exultation all across the width and breadth of Christendom, I knelt in a Christian outpost in a heathen, idolatrous land, and felt as unclean and stricken as one of the worst of these tragic people. I knew that some actually crippled and blinded their children, to make them seem more pitiful as beggars. These I would not help, as it only encouraged such outrages. But if I ever again saw a mother with a child at her shriveled breast, or an aged and infirm human being lying abandoned and naked in the street, these I would not pass by. I had many opportunities to test my resolve, beginning that same day. Sometimes I succeeded, sometimes I failed, but I hope I was never again indifferent.

The next day I went to the Pakistan High Commission, a huge mosque-like building, to get a permit to enter Pakistan at Lahore. The Filthy Family was there, along with many other hitchhikers and a few Afghans, who were distinguished from Indians by their turbans, larger size, and lighter color. Then I went to the Afghan embassy to apply for a visa, and on to the American Embassy, where I had American food at the cafeteria, my first since Antarctica, and bought a book, *The Continent of Circe*, an award-winning collection of essays by Nirad C. Chaudhuri. He gave me a treasured look into the Hindu mind in the days ahead. On the following day, I picked up visas for Afghanistan and Iran, shopped for ivory Taj Mahals in Connaught Place, watched a turbaned boy charm a cobra out of its basket with his flute, and visited the astronomy complex near Connaught Place. After that, I went to the train station and bought a third-class ticket to Lahore. The Filthy Family was there. She was still wearing the same dirty yellow dress. She told me she was propositioned by a wealthy-looking Hindu at the Pakistan High Commission, but she screamed “Pig!” and made a hasty exit.

I got to visiting with some Indian Sikhs on the train. One told me that, “Just as the Earth turns, civilizations also go through cycles. Civilization began in India (where else?), passed through Babylonia, Egypt, Greece, Rome, Western Europe, America, is now flourishing in Japan. China will be next, and then it will return to India where it began.” I said, “What’s all this about a rotating Earth? Have you abandoned the Hindu belief that the world is supported on the backs of three elephants standing on the shell of a giant turtle?”

We arrived at the last town in India in the morning, took a bus to the border, and boarded another bus to Lahore, where an evening train left for Peshawar on the Afghan frontier. A French hitchhiker had ridden the train with no ticket, bummed (and got) bus fare to the border from a native, and asked me for bus fare to Lahore. I told him that by traveling without paying, he gave us all a bad reputation. He said that he got to know the country better by living off the people. “Hogwash,” I said. “They pay for tickets. The only ones like you are the beggars.” He retorted, “I would pay, but I have no money.” “If you’re so stupid that you spend all your money getting 8000 miles from home and save nothing to get back, that is your misfortune,” I told him, “Jobs are available. Why don’t you find work and earn your way home?” “Work!” he said, “I don’t like work! Only a fool works!” That’s when I lost it. “At last you show your true colors! The world owes you a living! You aren’t a traveler, you’re just a common bum, so don’t come to me with your sob story. Find another sucker!” A lot of hitchhikers would go as far as their money lasted, and then worry about how to get back home. Some would then sell their blood or find

temporary work. The Indian customs officer at the border gave us all the “goodbye, good luck, and good riddance” look. I had several hours in Peshawar, so I ate at the YMCA and then wandered through the old walled city, with its narrow streets and cluttered shops. I bought a second-class cabin that I shared with some Pakistanis. A bearded German with a third-class ticket barged into our cabin shouting, “This looks very nice! I will sleep here!” I told him I’d throw him out, so he left.

I took the 10 AM bus from Peshawir to Kabul. The Filthy Family was at the bus station (same dirty yellow dress). They said their camera and transistor radio had been stolen on the overnight train. The bus went through the historic Khyber Pass. Tribesmen held the pass, not the government, and every town was a walled fortress. The pass was some 30 kilometers (20 miles) long, and a fort crowned every peak and appeared around every turn, or so it seemed. The tribesmen wore heavy double bandoliers of cartridges and carried ancient rifles. Even some of the passengers on the bus wore bullet-filled bandoliers across the vests of their business suits. The Khyber Pass was the most heavily fortified place I had seen in all my travels around the world. As the bus climbed onto the Afghan plateau, the lofty, snowy peaks of the Hindu Kush appeared and ringed the plateau in awesome majesty amid the rays of a fading sun. We stopped just long enough for the Moslems (now “Muslims”) on the bus to get out and make their evening supplications to Allah. It had been dark for some hours when we arrived in Kabul. The bearded German knew of a nearby hotel where rooms were 200 Afghani (75 cents) per night. It was the rendezvous of Peace Corps volunteers. Another German named Fred and I shared a bedroom. A cafeteria had American food at cheap prices, and Fred said, “I have been on the road for twelve years, and the only places I remember are where I could get food cheap.” I remembered the five-cent Coca Cola in Bangkok and had to agree. I asked, “Where did you get the money to travel for twelve years?” Fred replied, “I was fortunate to have been born at the right place at the right time.”

The next day, Fred and I joined the bearded German and his girlfriend, Allen and Inga, on a shopping tour of Kabul. Allen bought Inga a karakul coat for 4000 Afghanis that was priced at l0,000. I got a leather coat with a traditional design for 3000, down from 4500. Allen turned out to be an international playboy who was raised by his grandmother until he was eighteen. He bragged about the money he lost in Swiss and Riviera casinos. In one gambling palace, he was with a friend who was watching another man eating soup in the dining salon. “I don’t like that man’s face,” the friend said, and then went over and pissed in the man’s soup. Allen then told me his friend was the Aga Khan. When Allen was once asked to pay his hotel bill in advance, one time when he and Inga were looking like travel bums, he told the manager, “I’ll pay my bill in the morning like every other guest.” Then he said to me, “It took months, but I finally got that manager fired.” Another time when he was hitchhiking and looking shabby, another playboy picked him up. Allen said, “He recognized me as one of ‘The Set’ so I intimidated him into buying me dinner in a luxurious restaurant, then putting me up for the night, then lending me a private car, only stopping when I asked for an airplane and he told me it was in repair.” Allen boasted, “When I stepped off a train in India and was confronted by an assortment of beggars, I went to a nearby cart, bought a cake, and fed it to a dog to show my contempt for them.” Inga backed up every story that took place in the four years she was with him, saying he was “very hard—the hardest man I ever met.” Inga said, “Allen can destroy a man to his face, because he

instantly recognized the man's weaknesses."

I told Allen to destroy me. He started by saying, "First of all, you don't really want to go back to America because you are unhappy in your job. You are not happy. Life has lost its meaning for you, and you are soft-hearted. In other words you are a loser." I said, "You are projecting your view of yourself onto me. You are the one who is dreading to return home. That is why you have spent twelve years on the road. You had no family life or memory of family life, so home has no meaning for you. You are the one who is not happy. The closest you can come is the kind of perverted happiness you find by feeding a dog in the presence of hungry people. You are afraid of being soft-hearted because you see strength in being hard. The really strong man is not afraid to appear soft. You squandered the wealth and advantages of your birth. You are now my age, 3l, but you still have all the cynicism of when you were l8. In twelve years there should have been some growth, but there hasn't been. You are the loser, and you know it."

Allen was an interesting person and I couldn't dislike him. His voice and face resembled Victor Mature, a Hollywood actor of that day, but not his body. Like the pampered dogs who win ribbons for appearance but can't do anything useful, Allen was all show and no stay. Fred had formed the same opinion of Allen. More puzzling to me was Inga. She was from a poor Catholic family in Essen, and still saw herself that way. She admitted she was living with a man who didn't love her, and she disapproved of his cynicism and cruelty. Inga had a vague mission of giving him happiness he had never known. She said, "When we were stranded in a small native village in South Africa, an Englishman passed us in a car and then stopped ahead of us. Allen said to ignore him. When he backed up and came alongside us, Allen pretended to be observing the scenery. Finally, the man asked us if we would accompany him into the city. We got in and they both began berating the Catholic Church. Allen told him I was a Catholic. They didn't stop until they brought me to tears."

The next day I got visas for Iraq and Egypt, using Allen's method of saying, "I'm flying out today. Plans to meet me are made, and I need the visas now." A white lie, but harmless. Two roads went from Kabul to Heart on the Iranian border, a southern route through Kandahar and a northern route through rugged mountains. I favored the northern route, because it was more scenic and I might get a chance to see the ruins of Balkh, near the Russian border. Balkh had been the ancient city of Bactra, the capital of Bactria, the northeasternmost province of the old Persian Empire and the empire of Alexander the Great. The two humped camels of Asia were called Bactrian camels. I had read *Caravans*, an early novel by James Michener. It was a tale told by an American reporter, and the setting was before World War II. The reporter had been hired by a wealthy East Coast family to find their daughter, who had disappeared somewhere in Afghanistan. She was a willowy blonde debutante, and when the reporter found her, she had become the mistress of a nomadic Afghan chieftain who drove his tribal herds from summer pastures in the Afghan highlands to winter pastures on the steppes of central Asia. All the nomadic clans converged on Balkh on these occasions to trade for wives, rifles, and livestock, and to engage in dancing, feasting, and revelry. Everyone with romance and adventure in their blood will enjoy reading *Caravans*.

I was told that tribal warfare among the Afghan chieftains in the north made the northern route unsafe, so that no regular busses took it. The three Germans and I took the southern route,

leaving on a 7 AM bus. It was Sunday and I had hoped to attend Mass, but Kabul had no Catholic churches. The lunch stop on the bus was at an isolated town dominated by an impressive fortress on a hill that rose from the plain. We arrived in Kandahar at about 6 PM. There was no night bus to Herat, so we took a four-bed room in Hotel Kandahar. The next morning, two luxury busses were filled up at prices of 100 to 120 Afghanis per seat, so we took an old 90 Afghani bus with un-numbered seats into which as many were packed as would fit. We crossed a rain-soaked plain all day in falling rain. The scene reminded me of the Kimberley District in Western Australia during the monsoon season. It was late when we arrived in Herat, and there was no transportation to the Iranian border at a reasonable price. Many hitchhikers were in town, and the shops were open late selling Afghan coats, hats, and vests. It all had a very romantic and almost Medieval air about it which was most intoxicating. I bought two Siberian Leopard hats and tried, without success, to find a Turkmen hat made from Kashmir wool. We spent the night in a cheap hotel.

Afghanistan is the graveyard of imperialism. The Great Game at the end of the nineteenth century pitted the British Empire, which controlled "the world ocean," against the Russian Empire, which controlled the "heartland" of Eurasia. Afghanistan was the prize. The Brits invaded from India, took heavy casualties, and withdrew. The Russians invaded a century later, and their Communist Empire collapsed. Now we Americans are in there and getting handed our head.

The next morning, l5 March l969, Fred and I hired a jeep to take us to the border. The driver said he would take only eight passengers, and I told him that if he put on any more I would throw them off. He did and I did. I had gotten my fill of cramped travel on the bus. I was wearing my Stetson and a Pakistani passenger asked me if I was from Texas. "Where's Texas?" I said, "I'm from Dakota." Poppies were growing wild on the desert. I had heard that a lot of opium is smuggled out of here. We had to hitchhike the 20 miles between the Afghan and Iranian customs stations. A jeep stopped at Afghan customs and who should get off but The Filthy Family. *She was no longer wearing the dirty yellow dress*. She was wearing faded blue jeans. We all started walking, about a dozen hitchhikers. Eventually a truck overtook us and the driver took us to the nearest town in Iran for 50 Afghanis each. He picked up three French hitchhikers long after dark. One was just a girl. They only had sandals to wear on the wet, muddy road. Two chartered busses were waiting in the town to take some Iranians to Meshed, the first big town. I talked the driver into giving us the empty seats in the back of the bus at a reduced price. The whole plain from Herat to Meshed was flooded by spring rains, and the night was very cold. We arrived in Meshed close to midnight, found a cheap hotel, and went to bed. The proprietor stood in the doorway of our room until I finally ushered him out. The train to Tehran left Meshed at 11 AM.

It was Saint Patrick's Day, l7 March l969. We got our train tickets early and then had breakfast in the depot's snack shop. The Filthy Family showed up too late, and had to wait for a later train. Compared to India, the train was expensive but our compartment had padded seats. The train across northern Iran passed through the same flooded landscape we had seen since Kandahar. It was odd to see essentially desert country saturated with water. The train pulled into Tehran the next morning, and we took a taxi to a hotel recommended by three Danes on the train. I left to inquire about busses leaving for Baghdad. One was leaving at 4 PM, so I changed money

($2.80 bought one dinar) and bought a ticket. The Danes were joining a Frenchman who had driven his car to India and was returning through Turkey after his car was repaired. He said one Indian mechanic “repaired” a hole in his exhaust pipe by stuffing it with mud. I had time to visit an impressive Moslem madrasah (school) and have dinner in “Joe’s Place.” On leaving Tehran, I was able to admire its natural setting. It lies at the base of a curve of snowy mountains which form a most pleasant backdrop that can be seen from anywhere in the city, because the mountains are so close and so high. Once again, I was crossing a rain-soaked plateau with bleak mountains on the horizon. We stopped after dark at a large dining hall long enough to have supper. I had a heaping plate of rice with mutton chunks, and a salad of tomatoes, cucumbers, and lettuce, which could be stuffed inside the big flat sheets of unleavened bread that is served everywhere in Islam. Then we were off again. I was still moving.

As dawn broke, the bus was passing through a narrow cultivated valley, with sheer barren outcrops of rock, hundreds of feet high, soaring to the heavens from the right hand side of the road, and other ranges running away to the south on the left. We chased them until they swerved off in other directions or gradually became foothills and, when we entered the plain of Mesopotamia, they were gone. Our bus was delayed for over seven hours at the Iraqi frontier. The top of the bus was piled high with goods and everything was checked by border guards. It was spring, and Mesopotamia was greener than when I entered it in November two years earlier. Soon we crossed the Tigris River and entered the true Mesopotamia, the Land Between the Rivers, with the Euphrates River to the south. When we reached Baghdad, it was glowing in the rays of a fading sun. We crossed the Euphrates and arrived at the bus terminal. I took a city bus to South Gate in downtown Baghdad, intending to spend the night at the YMCA, as I had on my earlier trip. It had been closed for two years, shortly after my visit. It was the best YMCA I had patronized in all my travels throughout the world. It was in an enclosed compound where cars would be safe, had a restaurant, snack bar, both private and dormitory accommodations, and facilities for washing and laundering. Now it was closed; for what reason I never learned. I found lodging in a cheap hotel.

Baghdad is an interesting place, but I had been there, done that, and I was antsy to get home. I got visas at the Jordanian and Libyan embassies, and just missed the 2 PM bus to Amman (two dinars). I had to take a taxi that didn’t have a full load until after 5 PM (3.5 dinars). Soon I was chasing the setting sun across the Arabian Desert to the Mediterranean Sea. I was still moving.

Near midnight, we crossed the Iraq-Jordan frontier. The two customs stations were some miles apart and the posters of FATAH, the Palestine Freedom Fighters, were everywhere. One showed an Arab leader walking over Uncle Sam and bayoneting a Jew in a silk hat, through the Star of David on his chest, and pushing him over a cliff. That was the only one I saw linking America directly to Israel. These posters first appeared in Baghdad, but here a Palestinian came out of a tin shack, stopped every vehicle, and demanded contributions for The Cause. As dawn stole up behind us, we were again crossing the Black Rock Desert (or so I called it) of eastern Jordan, at which I marveled two years ago. With my new profession, I now imagined that the rocks had been transported and dropped by some ancient ice sheet. This time I saw many military encampments and soldiers drilling as we neared Amman, and a huge tent city of Palestinian refugees had appeared just outside of Amman. Jordan had lost control of the West

Bank, its agricultural heartland, in the l967 war and many Palestinians living there had fled east across the Jordan River. Jordan seemed to be preparing for another war. I was stopped repeatedly in Amman by policemen who wanted to see my passport. It began to irritate me and finally I said to two of them, “Who do you think I am? Moshe Dayan in disguise?” They laughed. Another change from two years ago was that the Jordanian police were now wearing spiked helmets, like the Prussian soldiers in World War I. For all that, I liked Jordanians. They had a gentle ruler in King Hussein, and he seemed to reflect the kindness of his people. I had met him at Northwestern University in the fall of l967, when he came there to give a talk.

The socialist governments of Iraq, Syria, Egypt, and Algeria had broken diplomatic relations with America after the l967 war. I was able to get an Iraqi visa in Kabul because Afghanistan was not an Arab country, but in Amman I could only get a seven-day transit visa for Egypt and I couldn’t get an Algerian visa at all. I met a Jordanian student named David, of all things, at the airport. He was studying engineering at the American University in Cairo. He told me that Jews don’t understand the Arab mentality, and that is why Zionism will ultimately fail. “They think brute force will discourage the Arabs, but an Arab can be beaten badly again and again, yet he will always wait for an opportunity to strike back, nursing and magnifying his grievance in the meantime.” He told me that Arab land confiscated by the Israeli government in l948 was only leased to Jewish farmers, so the Israeli government had not foreclosed the possibility of returning that land in some overall peace settlement. Arabs could accept that he said, or financial compensation if they wanted to live in an Arab country instead of Israel. David said nothing about “driving the Jews into the sea.” The wrist watch my parents had given me for high school graduation stopped ticking in Amman. I never replaced it and I manage fine without one.

When I boarded the United Arab Airline flight to Cairo in the late afternoon of 2l March l969, I was leaving the Asian leg of my long trip home and I consigned some reflections to my travel diary. In Afghanistan, the men smoke cigarettes by placing the cigarette between two fingers, making a fist, and then sucking on the fist at the thumb, so that a quantity of air is inhaled along with the tobacco smoke. Hitchhikers who tried it that way told me that give more of a jag.

Another thing I noticed was the absence of women in public, and their complete subordination—not to say degradation—in society. It doesn’t matter if the society is Buddhist, Hindu, or Moslem. This characteristic was accompanied by a generally puritanical and negative attitude toward life. Also, throughout southern Asia the only structures showing any architectural or aesthetic beauty or creativity were religious edifices. Even the palaces of potentates were less impressive than common pagodas, temples, or mosques. Here again, there seemed to be no place for women in the religious life of people. Only men were seen at worship. In the Buddhist pagodas, only men performed the duties. Although Hindus had no regular services, I never saw a woman in a religious activity. In Moslem countries, when the sundown prayer to Allah was to be offered, a bus on the open road stopped and the men got out, rolled out their mats, and performed the prayer rituals facing Mecca. Women stayed inside. This was in sharp contrast to Catholic countries, where women were involved in all religious activities except saying the Mass. In America, women virtually run the schools, hospitals, and social service agencies of the Catholic Church.

Southern Asia is spitting country. Spitting in public was habitual. It reached a peak in Afghanistan, where a man will stand in one spot while he hacks up great green, yellow, and brown gobs of phlegm from the farthest reaches of his intestines—even to the end of his colon—and then when his mouth can no longer contain the dredgings, he discharges the mass with great sound and fury and gusto onto the pavement, sidewalk, or floor—whatever the case may be. He then repeats this process until he has finally combed every last remnant of goo still clinging to the walls of his innards. By this time a great mass of slime will have accumulated at his feet and one would think he has coughed up his very gizzard. But that was only a temporary respite, for a few blocks down the street, the same man would begin the entire sequence anew. It was a habit that females in the hitchhiker set found singularly repulsive. They never adjusted to it and visibly shuddered whenever that saw it or thought about it.

I'll close on a philosophical note. It was obvious to me that the entire rim of southern Asia, from Singapore to Suez, is on the move. After centuries or even millennia of stagnation, the impact of Western Civilization, especially science and technology, had finally stirred the more restless part of the population. Our technology they want, our civilization we can keep, was a common attitude. They wanted to adopt Western science and technology, but retain their own cultural institutions free from "contamination" by the West. It will be interesting to see if they can pull this off, since their cultural institutions are based on religious philosophies that are negative, defeatist, and cynical. They will have to become cultural schizophrenics, since Western science and technology are based on the positive, confident, and optimistic viewpoint that has its roots in the teachings of Jesus Christ. An Indian lad said, "I love Jesus but I hate Christianity." That is the legacy of racist ideologies that accompanied Western imperialism, and of the fratricidal slaughter among Christians in two World Wars. Christianity is the last thing the East wants from the West. They would take Communism first. But Communism without Christ is now on the trash heap of history. The Eastern religions teach that the material world is an illusion that must be ignored if "true reality" is to be perceived. Western science and technology treat the material world as the only reality. Yet, a view is infecting Western society that the laws of nature are ultimately based only on statistical probabilities, and that is very close to the Eastern view that everything around us is an illusion. As the West abandons Christ, it will envelop planet Earth in a new Dark Age. Even now the shadows of that landscape are taking shape. Islam increasingly sees the West as The Great Satan.

United Arab Airlines flew Soviet *Ilyushin* airplanes with seats that folded backward and forward, so unoccupied seats in front could be used as footstools, which I liked. The plane landed in Cairo after dark and, when it braked, all unoccupied seats flopped forward with a loud clap. I took a taxi to the train station (six piasters) and bought a second class ticket on the overnight train to Alexandria. Egyptian guards kept me company all night, saying they were protecting me from thieves. The train arrived at 6 AM, and I went to the Libyan Transport Company to catch a bus to Benghazi. A Libyan was going there in his car and he offered to take me. I bought him a tank of gas and we were on our way. We passed El Alamein, where rows of rusting tanks and artillery, and a museum, reminded me of that decisive World War II battle. We drove through the Egyptian Desert, which came right down to the Mediterranean shoreline, stopping only for lunch and dinner at the only towns of consequence along the road. As we neared the frontier, the great plateau of the Sahara swung over to the sea, blocking off the low

plain along which we had been travelling. We cleared Egyptian customs, changed license plates, and zigzagged up the steep wall of the plateau to the Libyan customs, which was in a small town beyond a giant arch over the highway that announced our entry into Libyan territory. Barbed wire stretched from the arch to the horizon in both directions. By now, after every stop, the Libyan's car had to be pushed before it would start. We arrived in Tobruk at 7:30 PM, and we spent the night in a garage where Egyptian and Palestinian mechanics tried to fix the car.

One Egyptian told me, "Libyans like men," and sure enough my Libyan driver shortly pulled out pictures of skinny naked boys and passed them around for all to admire. In both Africa and Asia I noticed that Moslem men preferred to sodomize boys and youths who are skinny. I blamed the prevalence of homosexuality in Arab countries on the taboos concerning courtship and women among Moslems. A young Arab lad never sees an Arab girl in public, because she is obliged to peek with one eye out of a formless mass of cloth when she is in public. He cannot be seen in public with a girl unless he is engaged to her, and marriages are arranged by their families. "Love" isn't in the picture. Before a young man can marry, he must present his bride with a huge dowry and so much gold jewelry that she staggers under its weight at their wedding. Arab women also seem to age prematurely, so the glimpses of women a young lad sees in public are inevitably of a toothless old hag whose tattooed face looks like a pan full of worms, and who wears gold earrings so heavy they have pulled her earlobes down to her shoulders. One Arab told me that he was only shown a small photograph of the girl he married before he saw her on his wedding day.

By 8:30 AM we were off and running. The Libyan was going as far as Darnah, but I immediately got a taxi to Benghazi and I was still moving. I shared the taxi with a goat. As the sun sank in the west, we came upon a high arch across the road. It stood alone, except for one of the many police huts along the road where travelers had to stop and show identification. Atop the arch was the reclining figure of a man with a burst heart. I was told that, when Benghazi and Tripoli were the seats of two potentates some hundred years earlier, they decided to fix the border between them by each sending out a team of runners, with the border to be where the last runners met. This spot was where the runner from Tripoli burst his heart and died. Despite the tragic ending, it struck me as a sensible way to settle border disputes. Arriving in Benghazi, I immediately got another taxi to Tripoli. It broke down with 50 kilometers to go, but I was able to cover that distance in a bus. Taxis are used to take people over large distances across the desert in Arab countries. The driver will try to find a carload of people going somewhere, and they will split his fare among them. My bus arrived in Tripoli in the morning and I boarded another bus bound for Tunisia after only a half hour's wait. Libya was a country rich in oil but poor in human resources. In my rapid transit, all I saw was desert. There was no effort to use oil revenues to improve agriculture by way of irrigation, fertilization, and mechanization, and there were only four major towns separated by hundreds of miles of desert. A new university was being built in Benghazi, but who will staff it? Bedouins? Such were my thoughts in l969. I saw no reason to change them in l999.

A dozen years later, in 2013, Benghazi would be the center of world attention, when Islamic fanatics attacked and murdered the American ambassador (rumors were they then sodomized his corpse) and three American servicemen who tried to rescue him, against orders from the Obama White House. His Secretary of State, Hillary Clinton, stated in anger many

months later when questioned about it by the Senate Foreign Relations Committee, “After all at this point what difference does it make?” It made a difference to the wives and families of those four dead Americans in Benghazi. They shouldn’t be forgotten, not by me; they were Ambassador Christopher Stevens, Sean Smith, Tyrone Woods, and Glen Doherty.

The only other American I met in Libya was an oilman named McCloskey, whom I met in the last town before the Tunisian frontier. The only hitchhiker I saw was a Swiss returning from Egypt. The Libyan and Tunisian border towns were 50 kilometers apart. My bus stopped at Gabes for the night. It was a quiet, pleasant little town situated in the elbow of Tunisia where the Mediterranean Sea turns a corner. Everyone in Gabes seemed to be speaking French, even the Arabs among themselves. I shopped for bread, oranges, cheese, had my first ice cream since Vientiane in Laos, and checked in at the Youth Hostel. It was a clean, neat hostel in a clean, neat town. I saw only two hitchhikers staying there. The bus left Gabes at 10 AM and proceeded through well-kept fig orchards in an altogether prosperous and tidy countryside, wholly unlike Egypt and Libya. I ascribed it to the strong French influence. All shops were identified in French in the towns along our way, Gafsa, Sfax, Mahida, which had a large well-preserved coliseum, and Sousse. Every town had a walled-in portion that was extremely picturesque. The bus arrived in Tunis after 4 PM. As I was waiting for a city bus to the Youth Hostel, a thin young fellow approached me and said, “Are you American?” He said he would soon be visiting a friend in New York, and I warned him about taxi drivers and other hucksters. Then he said, “I like American men.” When I made no reply, he continued, “Do you know what I mean?” I said, “Don’t you like American women?” The bus arrived and I boarded it alone. He knew he would get nowhere with me. In all my travels, that was the first time I had been directly propositioned by a homosexual. When I got off the bus, three girls volunteered to take me to the Youth Hostel and a charming threesome they were. It occurred to me what a waste that young lad’s life must be, hustling strangers on the street while such pleasing local girls were beyond his field of vision.

The Youth Hostel was hosting a group of Soviets, Russians and one Kazak. I spent the evening describing my travels in the Soviet Union and around the world. They were mostly interested in how much money I spent, and how much I made in America. They were capitalists in socialists’ clothing. I shared my room with two young Brits who had hitchhiked across Morocco and Algeria, and also had trouble with homosexual men. Both youths were very thin, so I was inclined to believe what they told me. Two Moslem men gave them a lift and then invited them to spend the night at their place. The bedroom had wall-to-wall mattresses and cushions, so they could have slept anywhere, but they laid down right next to the Brits and soon their hands began to wander. The Brits got up and left. A Canadian lad arrived at the hostel and announced that he had just hitched from Alexandria to Tunis “without spending a cent of my own money.” He was a slender youth with long hair and a boyish appearance that made me wonder what he *had* spent. He was making a circuit of the Mediterranean, and he had recently visited Israel. “They are becoming more Nazi every day,” he said, and he went on to describe them as having all the characteristics of their former oppressors, racial arrogance, obsessed with being the Chosen People, contempt for international responsibilities, an expansionist foreign policy, persecution of Arab minorities, a feeling that the world is against them, overly sensitive to criticism, a belief that might makes right, and the general psychotic and fanatical mentality that characterized the Nazis.

The next morning I applied for and got an Algerian visa. I had a day in Tunis before the train to Algeria left the next morning, so I did some sightseeing. I had wanted to visit the ruins of Carthage, the old Phoenician city that had challenged Rome for control of the western Mediterranean and had produced Hannibal. After the Punic Wars, the Romans imposed what came to be known as a Carthaginian Peace. They leveled the city, plowed up the ground, and sowed it with salt so it could never be inhabited again. I was told there was nothing to see, so I didn't visit the site. Late that night, an American came to the hostel saying he had hitched across Algeria in two days, but had to walk the 27 miles between the Algerian and Tunisian custom stations, "half of it uphill," he said, because it was very hilly. He was walking along through the hills in the dark and was a bit frightened, when a man with a rifle came rushing at him from the bushes. He had heard that bandits infested the area, but the man turned out to be a policeman.

In the morning I attended the 7 AM Mass and bought four big oranges for ten cents. The cathedral was only about l5 percent filled, but most received Communion. I bought a train ticket through Algeria to Morocco, and was on the move again before noon. After passing through customs, the train stopped for the night in Annaba, where I spent the night in the waiting room of the train station. The train departed at 6:30 AM, bound for Constantine. An old Arab gentleman got on in Constantine, entered my cabin, sat down across from me, and began reading his newspaper. Then a young man came in, sat down very close next to me, and started saying something about Kennedy and Johnson. Suddenly I felt my trucker's billfold moving and, looking down, I saw his hand sliding it out of my pocket. When I grabbed his arm, he bolted for the door. I stood up, grabbed his belt with one hand and his shirt collar with the other hand, and heaved him right out of the open window of the moving train. The old Arab gentleman looked up from his newspaper, and then resumed reading. The train passed through hilly country that was alternately cultivated and too rocky for cultivation. At one point, great folds of rock testified to a severe geologic event. The heavens were ragged and dark all day, and rain began falling in the late afternoon. A group of pop singers came into our cabin. They had European faces, but had swarthy skin and kinky black hair. They rehearsed some songs and got off at Algiers.

At Algiers, three black students from sub-Saharan Africa came into my cabin. A lot of black blood must have entered the North African population, beginning with Roman slave expeditions to the south and continuing with the expansion of Islam in Africa. Even so, as I proceeded across North Africa, I noticed an increasing percentage of fair people, especially among the children. Hair never got blond, but a small number had brown or reddish brown hair. I never saw blue eyes, but I did see one or two gray-eyed people. In Jordan and Iraq, I occasionally saw blue eyes and light or red hair, and I was told that the Crusaders had left their calling cards. But these light colors are too widespread geographically for that. I think it represents recessive genes running through the general population that are manifested now and then in individuals, regardless of Crusader debauchery. There is a tendency to ascribe anyone who departs from black hair and brown eyes to the activity of some roving Scandinavian. But I have been in too many countries and have seen too many blond Australian Aborigines, red-haired Congolese Negroes, and blue-eyed Pakistanis to believe that each and every one had a Viking for an ancestor.

Our train arrived in Oran around midnight. The three Negroes and I spent the night trying to sleep on the hard benches in the third class waiting room. The train left for Morocco at 12:40

PM. I was on the move again. A couple with a screaming brat about three years old entered my cabin. I finally was able to quiet him down. The train passed through rugged but cultivated country that had the same red soil I had seen all over Africa in l967. The sky was dark and threatening all day, the sun never shown, and it was chilly. We crossed the frontier into Morocco and cleared customs at Oudjda. I couldn't buy a train ticket on to Fez and Tangier without Moroccan money, so I had to spend the night at the Youth Hostel.

An English lad at the Youth Hostel told me he had come up from South Africa by way of Rhodesia, Malawi, Zambia, Tanzania, Kenya, Uganda, the Sudan, and Egypt, and then had hitchhiked across North Africa. He said he flew from Entebbe in Uganda to Juba in the southern Sudan, where he hoped to take a Nile boat to Khartoum, but a storm kept his plane from landing in Juba, so it flew him on to Khartoum. I told him I had wanted to make that trip two years ago, only in the opposite direction, but foreigners weren't allowed in the southern Sudan because of fighting between the Nubians and the Arabs. He said the fighting had stopped. He said the only trouble he had was in Libya, where a truck driver gave him a lift and then tried to rape him. The English youth had a thin body. He escaped, but he met a American youth at an Algerian youth hostel who didn't escape. The boy had been robbed, beaten, and raped by two Arabs, who then left him naked. The lad broke down when he told his tale at the youth hostel. I asked, "Was the American youth slender like you?" "More like skinny," was the reply, "Why do you ask?" Here I should add that European and American youths who travel in Arab countries generally have little money, so they live on minimal food and are thin as a result, even when they otherwise might be more husky.

The train to Fez left at 1 PM the next day. It was a freight train with a few passenger cars. I had a third class ticket, but a young Canadian woman named Frances Cameron had a first or second class ticket, and she invited me to her cabin as her guest. She had been a social worker with the Indians in northern Manitoba, and now was hitchhiking alone through Europe, the Near East, and North Africa. She had been molested only once by an Arab on the train, and she repulsed him with a kick to his shins. She was quite pretty, and she said no vehicle ever passed her. She worked as a cook in an Israeli kibbutz for three months. She said a large number of kibbutz workers are foreigners, and most Israelis don't like to work on them. Foreign workers were segregated by nationality, so the only Israelis they see are the kibbutz managers. They sleep in a bunkhouse with no privacy, eat plain food in a common dining hall, and get paid $8 per month. She said the Jewish managers treated the foreign kibbutz workers with arrogance and scorn, "like shit" as she put it. Jewish youngsters must work on a kibbutz before they enter the army, and they hate it, Fran said, so the managers try to placate them. One trick was to give youngsters the best bunkhouses, which normally were reserved for those who had worked the longest at the kibbutz. Tourist workers were evacuated first on these occasions. Upon leaving a kibbutz, each tourist was given a questionnaire probing their views about Israel before and after their visit, about the l967 war, and about the disposition of Arab territory captured during the war. Despite annoying aspects, Fran said she enjoyed her visit to Israel and had made many friends there. I chuckled and said, "Only Jews could make tourists work for months under miserable conditions of intense heat, hard work, ingratitude, and slave wages, and then convince the tourists that the Jews were doing *them* a favor." She didn't take the bait.

I returned to my third class car while the conductor made his rounds. An old woman took

up two benches and fought off anyone who invaded her turf. The third class cars had a freewheeling atmosphere that was almost like a big family, and just opposite from the sterility of first class and second class cars. We changed trains at l AM and we didn't get moving again until 3 AM. A New Zealander entered my cabin and I commented that I was looking forward to eating "real food" in Europe, as I had been eating mostly rice since Thailand. He acted is if I had personally insulted him. His father had died working for UNESCO in Thailand, and he was engaged to a girl who was half Fiji and half Chinese. He said oriental cuisine was as good as anything in Europe. Maybe so, but not at my level of travel. I said, "There is a great bulk of knowledge on personal hygiene, proper nutrition, and agriculture that those people just don't know about. Therefore they are ignorant of these things. That's what I meant and all I meant." He pulled out his sleeping bag, crawled inside, and pulled it up over his head.

We both awoke the next morning to bangs and jerks as the engineer shunted around freight cars at a siding in the middle of nowhere. The Kiwi was returning from his third trip to Marrakech, where he bought Berber rugs that he sent to clients in London or Australia for sale. He and his fiance plan to arrange tours from London to Morocco. He shared his opinions on many subjects. Toledo steel was the best ever made. Madrid is the most beautiful city in the world. Russian technology tops all others. I challenged this last point, and learned that he had only spent a few days in Moscow and Leningrad, and had no direct knowledge of technology of any kind. He tossed off opinions as if they had been engraved on stone and handed down from Mount Sinai. Our train was two hours late when it arrived in Tangier. I toyed with the idea of going to Casablanca, so I could relish the exchange between Claude Rains and Humphrey Bogart in the movie classic by that name. Rains is the police chief for the Vichy French government during World War II and Bogart runs Rick's *Café Americaine*. Rains asks Bogart, "Why are you in Casablanca?" Bogie replies, "I came here for the waters." Rains: "But Casablanca is in the desert." Bogart: "I was misinformed." My urge to get home prevailed, and I bought a boat ticket across the Strait of Gibraltar. Then I wandered about in the bazaar until departure time. Women sitting cross-legged were scooping camel shit from pans and smearing it on their faces (to smooth wrinkles?). A boy approached me in the bazaar and said, "Let me take you to the Kazbah." With that, my trip to Morocco was complete!

The boat docked at Algeciras in Spain, where I had several hours until the train to Madrid left. I walked about the clean, tidy town, bought ice cream, and dined in a tavern where a guitarist and banjo player entertained the patrons, then passed a dish for donations, and wandered on to another tavern. As the train pulled out at 9 PM, I watched the black massif of the Rock of Gibraltar, glittering in strings of street lanterns and illuminated buildings, until it vanished around a curve. I was suddenly overcome with the realization that I was no longer engulfed by the poverty of India and the perversions of Islam. What an exultant feeling it was, and how appropriate, that I had returned to Christendom at one of its oldest and strongest bastions—Catholic Spain.

The train rolled through hilly country planted in vineyards and arrived at Madrid just before the siesta began at noon. I paid $54 for a second class train fare to Copenhagen, with a change in Paris, and then went sightseeing. Madrid was a striking city, clean with impressive buildings and ancient architecture. After siesta, I shopped for knives made from Toledo steel, found the ones I wanted, and boarded the 8 PM train to Paris. My right foot had become infected

and was badly swollen, but I was moving. The next morning, I was still in Spain and passing through rocky but fertile highlands The train entered France at Hendaya and passed through Bordeaux, Tours, and Chartres, before entering Paris at 6:40 PM. I bought bread, cheese, sausage, and oranges for the trip to Copenhagen. An orange cost 2 1/2 cents in Tunisia, 4 cents in Morocco, and l8 cents in Paris. Because of my sore foot, I saw nothing and was glad to leave. The train to Copenhagen left at 9:05 PM. I was still moving.

A Canadian on the train had planned to spend two weeks in Paris, but it was too expensive. His $5 hotel room had no hot water and no toilet (remember, this was 45 years ago). By morning we had exited Belgium at Liege and were crossing the north German plain, passing through Bremen, Hamburg, and Puttgarten. Around l:30 PM, a sea appeared to the right and I asked the German sharing my cabin if it was the North Sea or the Baltic Sea. He replied, "the North Sea," with certainty. I thought the Baltic should be on our right, so when I saw a wall map of the train route when we boarded the ferry boat to Copenhagen, I checked and it was the Baltic Sea. It had rained most of the day and still was when we arrived in Copenhagen. An instant reminder that I had entered Scandinavia was seeing Danes who were taller and blonder than the Spaniards and French. I stayed in the Youth Hostel for a dollar. It was full of Japanese, who enter Europe on the Trans-Siberian Railroad. I never saw one on the poor man's route through southern Asia that I had taken.

Many trolley cars operated in Copenhagen. I took one downtown the next morning and looked into airplane flights to Alaska that passed over the North Pole. Japan Air Lines, Lufthansa, and Scandinavian Airlines (SAS) all flew over the North Pole, but SAS was the only one that gave its passengers a certificate as proof. For dinner, I had the "Danish National Dish" at a restaurant, meatballs, potatoes, carrots, and peas for 9.5 krona (7.2 krona per dollar). Afterward I stood spellbound at the cash register as the cashier rang up all the add-ons, for a total of over l5 krona. As Dorothy said to Toto in *The Wizard of Oz*, "We're not in Kansas anymore."

Danes are good natured, jolly people. One at the SAS office told me that Soren Kierkegaard, "the Mad Dane," was translated as Soren *Cemetery*. I went to the Swedish Travel Bureau to buy a train ticket around the Scandinavian Peninsula, ending in Oslo. The woman at the counter was very formal. I said, "You must be Swedish." She acknowledged that she was and I said, "It shows." She took that as a criticism, so I explained that Swedes had the reputation of being formal, compared to Danes. "Well, I don't know what you mean. I have tried to give you what you want." By now other agents were listening in so I said, "Let's not say 'formal.' Let's say 'more businesslike'." That didn't satisfy her either.

On the train to Stockholm, I met a dark man with the distinctive accent acquired by educated black Americans. He had been born in California, but had lived in Sweden for 20 years and had traveled extensively in Europe. He liked the Scandinavians, Poles, and Irish best. He asked many questions, ranging from race problems in America to the Vietnam War. He said that American soldiers who were AWOL in Sweden wanted to go home. He seemed to be without bitterness, and very detached from it all. The train crossed over to Sweden by ferry. A gorgeous girl operated the candy counter on the ferry, but the most impressive girl by far was a brunette in the Iceland Airlines ticket office. She was close to 6 feet and 200 pounds, but was extremely shapely and well-proportioned. A real Juno. I took a taxi from the ferry to the train station, and

just caught the noon train to Stockholm. Unlike trains in India, the second class cars didn't have compartments.

By early morning, I had developed a fever and chills, so I went to the hospital when the train arrived in Stockholm. Before anyone even looked at my foot, I was charged 20 krona ($4), and then the only treatment I got was a tetanus shot, a changed bandage, and a prescription for penicillin pills. Stockholm was a very pleasant city. Many buildings had onion dome towers similar to those on Orthodox churches in Russia, and church steeples were everywhere. Few buildings were over five stories tall. All were made of stone and dated from another century. The total effect was almost Medieval, and the extreme cleanliness and the pastel colors of the buildings added a fairyland enchantment to the city. A new-looking square-rigged sailboat of considerable size was in the harbor. The ferry boat left for Finland at 6:30 PM. Finns on the boat reminded me of Russians. They were shorter and more rugged-looking than the slender Swedes. As the ferry boat passed among the islands on which Stockholm is built, the setting sun bathed the sky, the city, and the water in golden hues, until Stockholm became a dark silhouette of domes and spires between the gold of the sky and the water. Then I sailed under a bright moon through the archipelago which continues from Sweden to Finland. The soft light on the water amid the dark outline of passing islands was an altogether romantic and enchanting sight.

The ferry docked in Turku, the oldest town in Finland and a former capital. It had Finnish and Swedish populations, with Swedes living in the old city, which had preserved the Scandinavian wooden town of former days, with small buildings and narrow streets. Modern Turku was built after a fire burned the rest of the town in 1927. A sailing ship, *Swan of Finland,* and a museum ship, *Sigyn*, were at anchor in the harbor. The *Sigyn* was the last wooden ship to ply all seven seas. The train arrived in Helsinki at noon, and I took a trolley to the Youth Hostel. It was located in the stadium built for the 1951 Olympic Games. As elsewhere, the Youth Hostel was swarming with Japanese. I met two American Peace Corpsmen who had worked in Ghana, and then had come up through East Africa, across southern Asia to Japan, and had taken the Trans-Siberian Railroad to Moscow, where they saw the May Day parade, before continuing by train to Helsinki. They said it was the first time that no rockets were exhibited in the parade. They also said that the southern Sudan was now open to travelers, although they came up through Ethiopia, as I had two years earlier. They enjoyed Ethiopia as much as I had. Most Peace Corp volunteers taught English, having no other practical skills. Ghana wanted agricultural specialists, but the average volunteer had a liberal arts degree and didn't know grass from weeds. We went to the indoor swimming pool, and sampled the Finnish sauna bath. That really sweated the poison out of my swollen foot, and did more good than all the pills and the shot from the Swedish doctor.

The next morning I boarded the train for Kontiomaki. It passed through the eastern Finnish lake region, and the lakes gradually froze over as we got farther north. Although it was late spring, 8 April l969, buds disappeared from the trees and snow became more abundant. We were regressing from spring back into winter, just the opposite from my train trip from Leningrad to Murmansk in August, l966, when nature progressed through fall into winter. I found out that Kontiomaki was just a railroad junction, with no accommodations, but if I went to Oulu by way of Ylivieska, I could take a night train and cross over into northern Sweden without spending a night at the Finnish border town of Tornio. So I changed trains at Iisalmi and by 10

PM I was on my way to Ylivieska, and still moving. The trains were electric and had only a few cars, more like coupled trolleys than a train, but many old-fashioned steam locomotives with tall chimneys were at the Iisalmi station, and were still used. Iisalmi was almost at 64 degrees north latitude, and a chill was on the air after the sun set at 9:30 PM.

There was a two-hour wait at Ylivieska the next morning, 9 April 1969, while a train from Helsinki came up from the south. Our train was actually a two-car electric "bus." Each car had a control room for the engineer, so the cars could be either coupled together or travel separately. They were ideal for short runs in areas having few people. I boarded the Helsinki train, which was going to Rovaniemi on the Arctic Circle, but I got off at Tornio near the Swedish border. Some small brunette people in traditional costumes came into the train depot. I wondered if they were Lapps, but nobody spoke English. My foot infection was gone but I had acquired a severe case of constipation that had lasted two days by the time I reached Tornio. My bowel began severe contractions so painful that I sympathized with women in the throes of childbirth. The layover was 3 1/2 hours, so I got off the train and began looking for a drugstore. The business district was all on one street, and it was Sunday, so most of the shops were closed. The Finnish language has no Indo-European roots, so I couldn't tell a drugstore from the signs outside. As I walked up the street, looking in shop windows, I finally found what had to be the drugstore. The sign read "Apotek." Nobody was inside except a teenage girl behind the counter. She couldn't speak English, so I was unable to describe what I needed. Another contraction almost doubled me over and, in desperation, I took out a pad and pencil and drew a man backed up to a toilet with his pants down and a padlock over his ass. Then I pointed to the man and to my butt. Her expression changed immediately from puzzlement to enlightenment and, with a slight blush, took me to a shelf with small boxes of anal suppositories. I bought a box and she ushered me into a small room with a toilet. A few minutes later, I came out smiling broadly, thanked her profusely, and strolled back to the train depot. Necessity is the mother of invention and there are times when necessity trumps dignity. I boarded another electric "bus" train that crossed the Swedish border and took me to Boden. The train left and I was moving again, in more ways than one.

I had an hour's wait in Boden for the 3:15 PM train to Narvik. The train station was a big log building and very picturesque, as was Boden. The train to Narvik passed through rolling farmland dotted with curious sloped-walled sheds. North of the Arctic Circle, the farmland gave way to a vast wasteland covered by stunted trees. Five children came into my compartment and all but one had Lapp features. The train stopped at a village of less than ten small frame houses, and many of the people were Lapps. We stopped at Kiruna, the big mining town in northern Sweden that supplied Hitler with iron ore during World War II. Many skiers and trappers boarded the train, bound for the ski slopes at Riksgransen on the Norwegian frontier. Farther north, the overcast sky became even more bleak and the Lapp settlements were even more thin and forlorn. Ice houses dotted the occasional lakes and fishermen were still there after 9 PM. Land rose in the west as we entered the Caledonian highlands. Riksgransen appeared at the end of a long lake. The skiers got off and headed for the warm inviting glow from the windows of the lodge, while the wind whipped and whined and moaned all around them. The country beyond Riksgransen became very wild-looking, rugged, desolation. Shortly after the train crossed the Swedish frontier, we came upon Ofotfjord and followed it all the way to Narvik. The upper

narrower reaches of the fjord were very spectacular and awesome, but it widened and became more gentle, until it had lost all its barbaric splendor by the time we arrived in Narvik at 11:20 PM. I found the Youth Hostel, woke the warden, and got in.

Ofotfjord was an inland extension of Vesgtfjord, which separated the Norwegian mainland from a tongue of islands called the Lofotens. Edgar Allen Poe wrote a short story called *A Descent Into The Maelstrom*, which is a giant tidal whirlpool off the Lofotens. Huge cranes transferred iron ore brought by train from Kiruna to ore ships waiting their turn in the fjord. Breakfast at the Youth Hostel was the traditional Norwegian smorgasbord of seafood, cheeses, bread, honeys, jams, jellies, milk, coffee, tea, cereal, and cold cuts of ham and sausage. I got my first taste of brown goat's cheese, a Norwegian specialty. Narvik was built on hillsides, and was a picturesque patchwork of multicolored houses running up the slopes and over the waters. I boarded the bus to Fauske, and began visiting with an engaging Scotswoman, 72 years old, who had sold her silver teapot to finance her tour of Norway and see the church where her grandparents were married. Her grandmother was a Norwegian girl who bore 14 children and promptly died. The children ate standing at a huge round table and her grandfather used a long whip to flick the legs of anyone who misbehaved at mealtime. She had been to Russia with other Scots twice and, after recounting incidents of Intourist incompetence, added in her Scottish burr, "But we was very proud of that stoic Scots discipline. We could have yelled and screamed like a bunch of Italians, but not one of us said a word."

The bus followed a dirt road that wound along the coast where the fjords came down to the sea, taking ferries across small fjords on four occasions. We got breathtaking views of the snowy Lofotens running away toward the west. When we arrived in Fauste, my Scottish sweetheart wondered, "Do you think a 72-year-old lady could spend the night in the Youth Hostel? My silver teapot still has to get me back home." My overnight train to Trondheim was waiting and departed at 9:30 PM. I awoke the next morning to see gentle inland valleys pass by the train windows. It was farmland and each farm was dominated by one or two big white houses having perhaps 15 rooms, and surrounded by red barns and sheds. The train passed through a town named Hell just before arriving at Trondheim. I thought, "I've gone through Hell on this trip." Trondheim was at the end of Trondheimsfjord, one of the longest fjords in Norway, and Trondheim was by far the most picturesque city I had seen in Scandinavia. Most buildings, even downtown, were of wood and each was painted a different color. Warehouses along the waterfront opened to the boats on one side and to the streets on the other, and overhead hooks and pulleys hauled goods up to one of the three levels inside. A stone fort with cannons looking out from battlements guarded the town from a high hill, and quaint bridges crossed the river nearby. A big stone church dominated the city and the center of the business district was marked by a Viking bearing a sword and cross atop a tall pillar. Trolley cars plied the cobblestone streets and budding trees lined the sidewalks. The flag of Norway, a blue cross with white trim on a red field, flew from many flagpoles. It was Sunday and the town was quiet, but I was unable to locate a Catholic church in my hour before boarding the train to Oslo. It left at 10:40 AM and took me up a farmed and densely settled valley that narrowed as the train entering Dombas, a ski resort on the crest of the Caledonian mountains of Norway. Then the train descended another valley that became wider and more settled as we neared Oslo.

The train arrived in Oslo at 8:15 PM and I walked about the city until the 11:00 PM train

left for Bergen. Oslo was a typical Scandinavian city. Cleanliness was the first impression, followed by a quiet elegance and a certain charm arising from the architecture and trolley cars of an earlier era. There were many sidewalk cafes, similar to those in Paris, and many people were on the sidewalk, mostly young, even though it was Sunday evening and only restaurants and snack bars were open. The train to Bergen was full of sailors. I awoke at 6 AM to see us careening down a narrow canyon, while far below a raging river rushed through restraining rapids, as lazy trails of fog and mist rose up the sheer rock walls and hung in narrow profiles until the late morning sun boiled them away. The vision was from the shadowy violent world of the ancient Norse sagas. Eventually the river entered Sorfjord, and the train wound through that narrow gorge for miles before the first gaily painted villages clinging to the rock walls emerged from the mists. The train roared through tunnel after tunnel, between which rocky ridges swooped down to the water in multi hues of blue. Emerging from the last tunnel, I saw the colorful houses of Bergen clustered across a quiet lagoon filled with brightly painted boats of every description. A large red brick church overlooked the business district from a hilltop that was also the campus of a university. Big ships were anchored in the port and busy factories dotted the sides of the fjord.

After four hours of sightseeing, I boarded a noon flight to the Faeroe Islands. I got a good look at the rocky 300 million-year-old coast of Norway before the plane disappeared into the clouds. When it broke through the clouds, I was greeted by the barren, light green pastures and the steep, dark cliffs of the Faeroe Islands. The plane circled Vagar Island before landing, and I saw small, colorful villages nestled in gaping glacier-formed valleys, or perched at the edge of a lonely, bleak cliff above the angry, foaming and incredibly blue water of the North Atlantic far below. At once I was glad I made this trip. I took a bus through two or three small villages to a ferry that took me to Streymoy Island. I met a Faeroese named Oliver Ness on the ferry and he took me to Kvivik to show me the ruins of an old Viking farm, to the top of Streymoy Island to show me a panoramic view of the glacier-formed cirques and valleys that dominate the Faeroe landscape, and then on to Torshavn, the largest town. A black ship was anchored in the harbor, and Oliver said it was going to Greenland the next day, and he could get me on it if I wished. Oliver also arranged for me to meet Johannes Rasmussen at his home. Rasmussen had worked out the geology of the Faeroes, northeast Ireland, western Scotland, Iceland, and parts of Greenland. As he explained in his cozy home, all these coasts were formed from basaltic rocks 60 to 50 million years ago. That was when the North Atlantic opened, according to the theory of continental drift, and I immediately drew a sketch map of how Rasmussen's study areas would look if the ocean were closed. Sure enough, all the basaltic rocks lined up along the original rift that opened the North Atlantic. We discussed these ideas while Mrs. Rasmussen served tea and sandwiches. Then we visited in a lighter vein that included her until 9:30 PM, when I returned to my hotel.

It was raining in the morning, when I bought a ticket on the *Tjaldar*, the ship going to Greenland. I boarded around noon, as the weather wasn't good for sightseeing, but the ship didn't leave until 8 AM the following day. A sizable crowd saw the ship off. Two Faeroe fishermen and their Greenland Eskimo wives (who didn't fit into Faeroe society) were aboard. Breakfast consisted of dark and white bread, butter, jam, cheese, two kinds of cold cuts, tea, and coffee. Lunch consisted of fish and potatoes with melted butter, and a milk-rice broth over which

a sugar-cinnamon mixture was sprinkled. Supper consisted of potatoes, sliced wieners fried in butter, three kinds of cold cuts, light and dark bread, butter, cheese, tea, and coffee. Soda pop was 20 cents a bottle. The sea changed by the hour. In the morning it was so blue it looked black alongside the ship. In the afternoon it had turned to lead. By evening it was silver in the fading light. After drinking all day, some of the younger men—boys really—were staggering drunk. At 10 PM, one boy appeared at my cabin door with two girls and asked, "Would you like to complete a fucking foursome for the night in our cabin?" I demurred. One very attractive and shapely young lass was aboard with a small boy in tow. She wore a mini skirt and it was impossible not to look at her, but I seemed to be the only one paying attention. That's how drunk everyone else was.

The next day I learned more about the ship. It was built in 1930 and it took Faeroe fishermen and their boats to Greenland four times every year, two at the start and two at the end of the fishing season. The fishermen would be away for seven months (that's why so many were drunk, especially the first-time boy fishermen). It had a crew of only eight men, and the fishermen prepared all meals to cut costs. They collectively paid 200,000 krona ($26,400) for each trip, and their fishing boats were stored on the ship, eight above and four below deck. The rest of the time, the ship took people from Denmark to the Faeroe Islands. The fishing boats were about 30 feet long, and operated with two to four fishermen, who worked from 3 AM to 12 PM every day for four months after they reached the fishing grounds. Some would be working on a factory ship that took the fish to a processing plant in Greenland that made fish fillets for the American market. Eskimo blood was stronger than Norse blood. I joined a Faeroe Islander, his Greenland wife, and their small son for supper. The boy looked like a miniature Genghis Khan. The Faeroe Islanders were a bit shorter, heavier, and less blonde than Scandinavians, but what struck me was their extremely white skin. The youths were also very smooth-skinned. By age 25 their faces showed the effects of wind and salt spray. Every face over 40 was a masterpiece of character. The older men were as grizzled as men get.

A sea of ten-foot waves on the first day was smooth as glass on the third day. Gulls glided above our ship the whole way, tilting and dipping to make their bodies turn. We sighted the first sea ice on 17 April 1969. Dinner featured the Faeroe Island Special, whale meat plus whale blubber and potatoes, the national dish. The meat tasted like liver and the blubber was tasteless oil. The fourth day was Sunday and Godthaab radio in Greenland broadcast sermons and hymns. We had rounded the southern tip of Greenland and were heading north. Icebergs were drifting past our ship by Monday. Ice conditions kept the ship from landing the fishermen at Faeroehavn, their destination, so the captain went on to Nordafar, a settlement of about a dozen buildings nestled in a small fjord. About 100 people greeted us on the pier. There was a store, several warehouses along the pier, a clutch of big gas storage tanks across the fjord, and fishermen's houses painted in bright primary colors. Some houses were painted black with a paint that resisted weathering and sea spray better that the other paints. Some freshly varnished fishing boats were in dry docks for repairs. The Arctic tundra grew out of gray metamorphic rocks thrown up in range after range as far as the eye could see. Patches of snow covered about 20 percent of the land. I couldn't see the Greenland Ice Sheet.

I spent the night at the seamen's home for Faeroe Islanders, and the next morning I got passage to Godthaab on a large wooden ship that left that afternoon. It took hours of threading

through sea ice and icebergs, with an Eskimo up on the crow's nest on the mast to point out open leads. I was told to call them Greenlanders, as "Eskimo" is like "Nigger" to them. We passed the *Arctic Explorer* (the factory ship), which was beset in the sea ice. After we got through the sea ice piled up along the coast, we had smooth sailing and I turned in after the sun set. When I awoke the next morning, the ship was off the coast of Godthaab. We entered the harbor almost 17 hours after we left Nordafar. Godthaab was the administrative capital of Greenland. There were several apartment buildings and seven construction cranes were putting up seven new apartment buildings. I saw a general store (Ole's Warehouse), a supermarket, a meat market, a clothing store, a bank, a post office, several cafes, a camera shop, and at least two churches (one Catholic). I was wearing the leather Afghan coat I had bought in Kabul and my Stetson hat. Everyone wanted to see the "cowboy" who came to Greenland. All helicopter flights to Sondre Stromfjord, the only international airport in Greenland, were booked, and then canceled by bad weather. I booked a room at the hotel.

The next afternoon I boarded a helicopter to Sondre Stromfjord. It flew under the clouds, so I got a good look at the fjordland coast of West Greenland, and the sea ice offshore that had kept ships from getting into the coastal settlements. The terrain between the coast and the ice sheet was all scoured and smoothed by ice at a time when the ice sheet was larger. The edge of the ice sheet was cracked and broken as ice bent to match the bedrock contours. Tongues of ice reached down the valleys. Water gushed from beneath these tongues, creating rivers that threaded through the deglaciated landscape and poured into the sea at the heads of fjords. As we approached Sondre Stromfjord, the barren glacier-carved rocks turned green from a dense growth of dwarf willow trees. This part of Greenland was actually heavily forested, and justified the name, but the dwarf willows were only a foot or so high and spread horizontally over the bedrock instead of growing vertically. By 4 PM we had reached the head of Sondre Stromfjord, one of the longest in Greenland, and saw the American Air Force base that bore that name. It was part of the Distant Early Warning system, the so-called DEW line, that stretched from Alaska across the Canadian Arctic to Greenland, and defended North America from possible Russian air strikes over the North Pole. Sondre Stromfjord also had a commercial airport and hotel operated by SAS for tourists who visit Greenland.

The US Air Force flew American and foreign scientists from Christchurch in New Zealand to McMurdo Station in Antarctica, and I had been given a card that allowed civilians to be on those flights. My hope was that the card would allow me to take a military flight from Greenland to Alaska. Major Pike, second in command at the base, told me he would see what he could do, and I should come back the next day. After spending the night at the SAS hotel, I returned to the Air Force base and was told by a Lieutenant Skinner, "We are still working on it." The French glaciologist, Paul-Emiele Victor, was arriving shortly for field work on the Greenland Ice Sheet. I saw my first Musk Ox grazing near the base. Nothing was resolved. I went to the Sunday service for Catholic airmen the next day, and at breakfast with them afterward I was told that the Air Force usually flew to Alaska by way of McGuire Air Force Base in New Jersey, and only occasionally took the route from Sondre Stromfjord to Thule (another US Air Force Base in northwest Greenland) to Yellowknife (a refueling stop in the Northwest Territories of Canada), to Fairbanks, to Anchorage. The next three flights to Alaska would be through McGuire. The airmen said three Air Force planes had cracked up around there in the last

few months. One ploughed into the side of a mountain about three miles from Sondre Stromfjord. The last one happened just days earlier when a pilot got drunk, jumped in a plane, and headed for the states. The last words they heard over his cockpit radio were, “Honey, I’m coming home.” He went down in the drink.

On Monday morning, 26 April 1969, I bought a ticket to Denmark on SAS for a flight the next day. The Danish king’s brother was on the arrival flight. Flying over the Greenland Ice Sheet was a thrill. On the west, the ice sheet had pulled back from the sea, exposing low barren mountain ranges, but in the east the ice sheet had overridden higher mountains and emptied directly into the sea. Icebergs calved into the sea and were carried southward around Greenland and drifted up the west coast to become part of the ice jam that kept the fishermen out of Faeroehavn. An hour over the ice sheet and a half hour over the sea put the plane over Iceland, where I got a spectacular aerial view of mountains, valleys, glaciers, ice caps, and volcanoes. Ice caps covered high plateaus and perched on the edges as icy cliffs, one old volcano was completely draped by an ice cap, and glaciers wound through dark, remote valleys. I saw some small Icelandic towns along the coast but the interior was desolate. Then I flew over the Faeroe Islands on a clear day, before the sky darkened over Jutland and I saw the vast web of lights that was Copenhagen. I caught the overnight train to Hamburg.

In the morning I visited all the airline offices to see which ones had flights over the North Pole, as I wanted this trip around the world to be a polar route, having already been to the South Pole on a flight to Plateau Station in Antarctica. My 1966-1967 trip around the world had followed a more equatorial route. Five airlines, SAS, Air France, KLM, Lufthansa, and JAL advertised polar routes to Alaska, and both SAS and Air France gave certificates stating their passengers had “conquered the pole.” However, I learned that they all took minimum flight time routes dictated by high-altitude wind conditions that may or may not take passengers over the North Pole. Flights from Hamburg and Copenhagen generally came close to or over the pole, but flights from Amsterdam, Paris, and London generally were farther. The Lufthansa agent told me that their Hamburg flights crossed the North Pole if wind conditions on the minimum flight time route took their planes close enough so the deviation was minor. I took him at his word and bought a ticket to Anchorage.

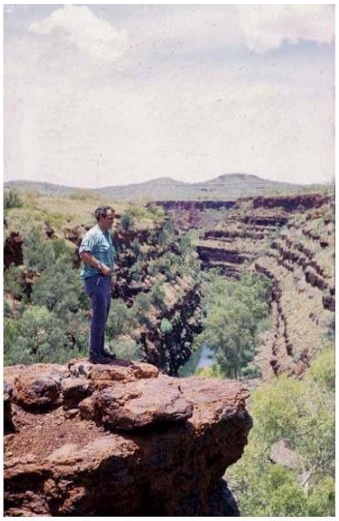
As it happened, the flight brushed the northeast tip of Greenland, and I got a distant look at two giant ice streams, Zachariae Isstrom and Nioghalvfjerdsbrae Gletscher. The ice sheet itself was too far inland to see, and was just a white haze on the horizon. Perhaps a half hour later, the pilot said over the loudspeaker, “We are now crossing the North Pole.” Passengers cheered but I thought, “Well, maybe.” The next land I saw was the Alaskan Brooks Range, a rugged snowy desolate region that extended for miles to the south, even though the range runs east-west. After that, we flew over the Yukon Valley and saw the first vegetation, a pale green tint to the flat land dotted with dwarfed trees, laced with snaking rivers, and spattered with oddly shaped lakes. Only the Yukon River itself was a dominant feature on that landscape. I got a magnificent view of Mount McKinley very close to our plane on the west side. Then Anchorage appeared on the shore of Seward Inlet. As soon as we landed, I called my cousin Johnnie Hughes, my Godfather Felan’s son, and got his wife Marjorie on the phone. She said I must stay with them and she was coming to get me. While I was waiting, I saw the map of the flight path from Hamburg to Copenhagen to Anchorage in the Lufthansa office. It followed the Norwegian coast to Narvik

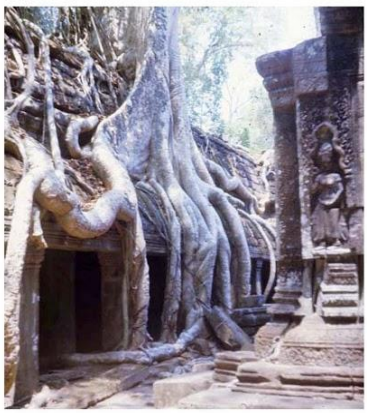
and then angled on a path that clipped the northeast end of Greenland and passed within 200 miles of the North Pole on a line to Anchorage. I saw the captain of our plane and said, “According to that map, we didn’t fly over the North Pole.” He said that winds coming off the Greenland Ice Sheet had pushed the plane north, so our flight did indeed pass over the North Pole and he went a bit out of his way to do it.

Marjorie picked me up and I spent the rest of the day relating my adventures to her and Johnnie. The next morning she took me to the airport and I flew over the Alaska Range to Cordova and Juneau on a flight to Seattle. Landing in Juneau was an experience indeed, flying into a narrow valley-fjord with steep rock walls. From Seattle, I took a bus to Medford, Oregon, to visit my brother Leo and his family. They had moved from Covallis, where I visited them in 1968. Paw was visiting, so except for Tim and his family, we had a family reunion. From there, I took another bus through the giant Redwoods of northern California and across the Golden Gate Bridge to San Francisco. Then I took a train to Los Angeles and on to the Grand Canyon, riding the Atchison Topeka and Santa Fe Railroad. Then I hiked down the south rim on Kaibab Trail, crossed the suspension bridge over the inner gorge to Phantom Ranch, watched Indian dancers, spent the night on the sandy bank of the Colorado River, and hiked out on River Trail and Bright Angel Trail the next day. I continued on to Colorado Springs, where I visited my brother Tim and his family. A bus took me from there to Pierre to see Paw again. He had recovered enough from his stroke to visit Felan’s ranch on upper Willow Creek. All the buildings were dilapidated and the house was vacant. Whoever owned the ranch probably lived in Fort Pierre. Most ranchers now lived in nearby towns because improved highways made that option more appealing. Felan had sold his ranch to a turkey rancher after he and Florence retired to Arizona. We visited the ranch some years earlier. The house was still occupied and the rancher was about to feed his turkeys so we went along. The feed was in his pickup truck. He stopped in a large circular area devoid of grass and scattered with turkey carcasses. I shoveled out feed as he drove around. No turkeys were in sight. Then he parked at the edge of the area and honked his horn. In the distance I head a rising din and saw a veil of dust on the horizon. Suddenly the turkeys came swooping in from three directions, half leaping, half flying, their bodies up to three feet above the ground. Anyone standing in their way would have been cut in two. What a sight!

Back in Columbus, Ohio, I found I still had my job at the Institute for Polar Studies. It had been over five months since I left the South Pole to begin my return by way of the North Pole. Everyone at the Institute gave me a warm welcome. If my job allowed this kind of flexibility, so long as I didn’t abuse it, I decided then and there that glaciology was going to be my profession for life.

The map of global hemispheres at the beginning of this chapter (Chapter 6), doesn’t show the flight from Anchorage to Seattle. Instead, by mistake, it shows my overland trip from Fairbanks via the White Pass and Yukon Railroad and the Inside Passage ferryboat voyage I describe near the end of Chapter 4. Colin Bull died in 2009 just as he and his wife Gillian were beginning the same voyage, beginning in Seattle.





Photos for Chapter 6: The Long Way Home

Sheet 1: From Antarctica to the Himalayas

Photos are numbered from left to right and from top to bottom.

1. Inside a Maori museum in Auckland, New Zealand. Notice the elaborately hand-carved bow of the war canoe. A Maori house is behind the canoe.

2. I'm standing above Dale's Gorge in Western Australia.

3. Aborigines who repair pearling boats in Broome, Western Australia.

4. Flooding of coastal and interior northwestern Australia during the rainy season.

5. The staircase to a Buddhist temple in Ban Hoi Sai, Laos, across the Mekong River from Ching Kong, a village in northern Thailand.

6. Laotian boatsmen use a woven-vine cable to connect with another barge that will attempt to pull our barge off a submerged sandbar in the Mekong River.

7. Construction details of bamboo pungi sticks used to repel Viet Minh guerrillas from attacking the docking platform for a ferryboat across the Mekong River in Laos.

8. A gigantic ancient elephant inside the Royal Zoo in Pnom Penh, Cambodia.

9. I'm on the walkway over the moat surrounding Angkor Wat in Cambodia.

10. The jungle has reclaimed much of Angkor Wat. It had been abandoned and lost for centuries.

11. The golden Zue Drag Pagoda in Rangoon, Burma. Like the Egyptian pyramids, it is one of the wonders of the Ancient World.

12. The outdoor market in Katmandu, Nepal. A craftsman displays his artistry.



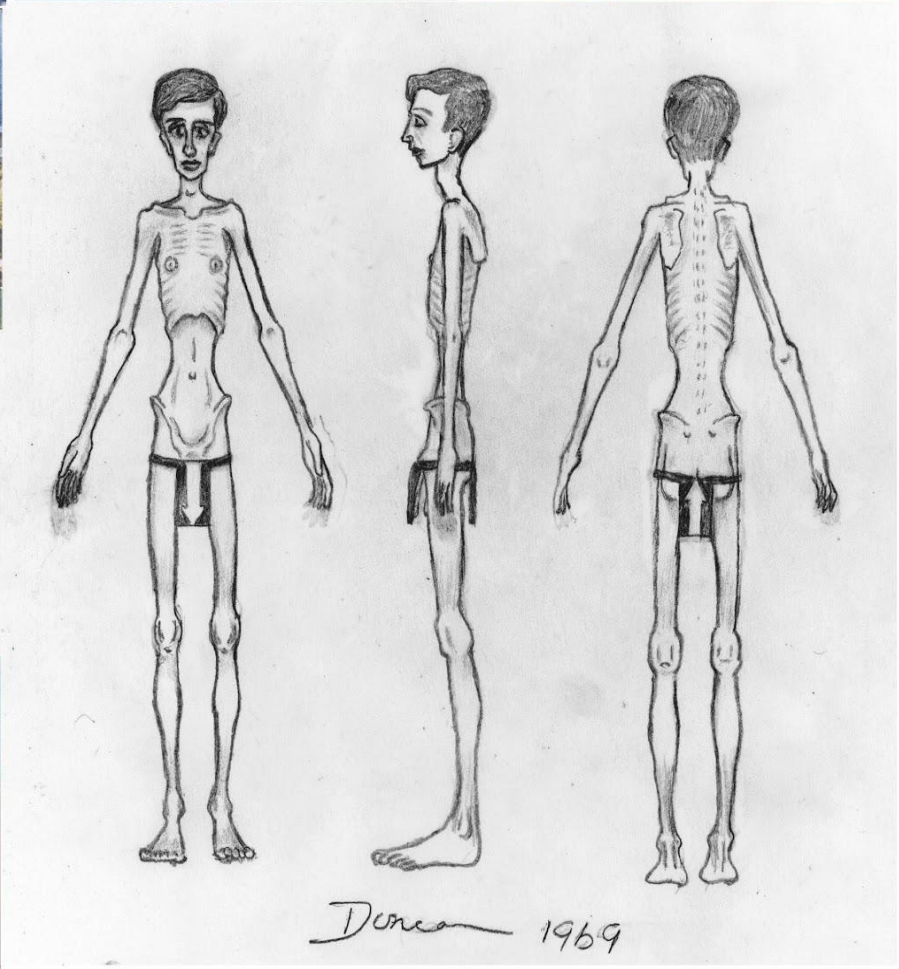











Duncan 1969

Photos and drawing for Chapter 6: The Long Way Home

Sheet 2: Photos are from India to Alaska via the North Pole

Photos are numbered from left to right and from top to bottom.

1. Hindus bathing in the Ganges River at Benares, the Hindu Holy City.

2. The Khyber Pass from Pakistan into Afghanistan. Alexander the Great passed through.

3. My bus stopped here on the road from Kabul to Kandahar in Afghanistan.

4. Afghan boys. Brown hair and blue eyes are in the gene pool. I seldom saw girls.

5. The border gate in Libya between the old Barbary states of Benghazi and Tripoli.

6. Steam locomotives still in use Finland. In Iisalmi, on the railroad to Rovaniemi.

7. Lap houses in Lapland, northern Sweden. Snow still covers the ground in May.

8. Sorfjord in Norway, one of the many fjords from Narvik to Begen, from where I flew to the Faeroe Islands to catch a ship to Greenland.

9. Faeroe Island fishermen depart for their Greenland fishing grounds in May. Their small fishing boats are stacked on the deck of a ship that can steam through sea ice.

10. Me on a Greenland fishing boat going from Nordafar to Godthab in Greenland. I'm wearing a leather fir-lined coat I bought in Afghanistan. Iceberg "bergy bits" float in the water.

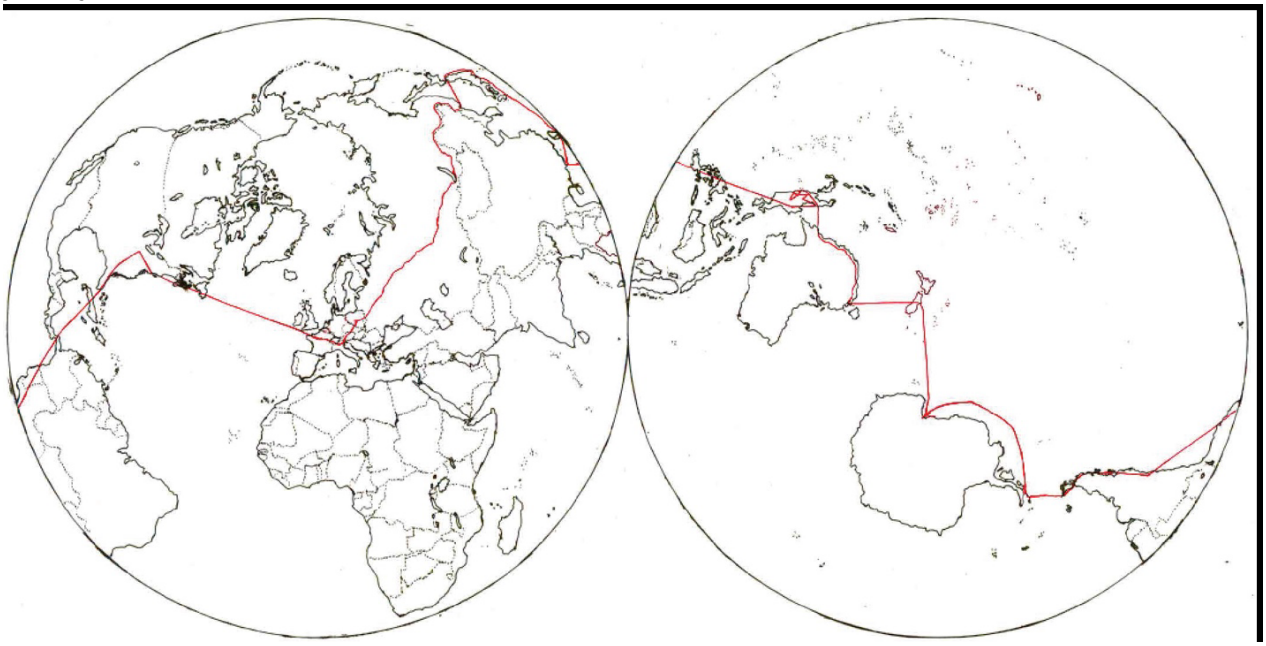
11. The ship from the Faeroe Islands reaches the coast of Greenland near Godthab at the crack of dawn

12. The Yukon River from the airplane on my flight to Alaska that crossed the North Pole. The nearly flat landscape is permafrost with an "active layer" that thaws in summer so the surface becomes spattered with lakes that cannot drain.

13. Duncan posing for me in his "American Indian costume" when we were in Darwin. He designed it and made it in England to wear on Australian beaches. He saw me sketch "natives" (of all colors) and give them my drawings and he wanted one of him. After he approved of my drawing, he signed and dated it, handed it back, and said, "To remember me by." So here it is. He's remembered.

CHAPTER 7 - FIRE AND ICE

The red line on the global hemispheres shows my second trip to Antarctica to study effects of a volcanic eruption on Deception Island, then a return to Meserve Glacier in the Dry Valleys, and another long journey home.



Out of his mouth go forth firebrands; sparks of fire leap forth. From his nostrils issues steam, as from a seething pot or bowl. Job 41:11-12

Deception Island is the only active volcano in Antarctica that has been seen erupting. It lies at the south end of Drake Passage, just north of the Antarctic Peninsula. The crew of the United States Exploring Expedition under Charles Wilkes saw it erupt in l842. At that time, it had become a collapsed volcanic caldera, but it was originally a conical volcano. It subsequently developed multiple vents along ring faults around the volcano and, during later eruptions, the cone inside the ring faults subsided beneath the sea to produce the central crater of the caldera. Glaciers crowned most of the caldera rim. The sea breached the rim at one site and flooded the crater. The other active volcano in Antarctica is Mount Erebus on Ross Island, but it hasn't erupted in historical times. A volcano at the base of the Antarctic Peninsula was seen erupting in images from Earth-orbiting satellites. However, Deception Island, with repeated historical eruptions on its glaciated slopes, is the primary place in Antarctica where fire and ice coexist.

During the heyday of nineteenth century whaling, the flooded crater on Deception Island was a safe refuge against winds of the "screaming sixties" that howled through Drake Passage and buffeted whaling ships. At that time, features on Deception Island acquired evocative names. Ships passed under Cathedral Crags as they sailed through Neptune's Bellows, the breach in the caldera rim, into Port Foster, the flooded crater. The best anchorages were in Whalers Bay just to the right of Cathedral Crags, Pendulum Cove to the north, Telefon Bay to the northwest, and Fumarole Bay to the west. Norwegian whalers constructed a factory on the beach in Whalers Bay, and used it to boil down whale blubber into oil. As Antarctica was being carved up into pie-shaped wedges by Western imperialists, Argentina, Britain, and Chile all laid claim to the Antarctic Peninsula and the offshore islands. To reinforce their claims, all three built permanent stations on Deception Island; the Argentines in Fumarole Bay, the British in Whalers Bay, and the Chileans in Pendulum Cove.

The most recent volcanic eruptions on Deception Island took place on 4 – 7 December l967, on 2l - 23 February l969, and on l2 August l970. There were two centers for the l967 eruption, one in Telefon Bay that produced an island with three craters, and one onshore between Telefon Bay and Pendulum Cove that produced a new crater on land and severely damaged the Chilean Station. As partly molten volcanic bombs rained down all around them, the Chileans put corrugated sheets of iron over their heads and ran from their station to the British Station in Whalers Bay, about three miles to the south. A flood of water from melting glaciers produced a gorge and washed over the onshore eruption site.

The l969 eruption was preceded by weeks of seismic tremors. The eruption began onshore of Pendulum Cove, completely destroyed the evacuated Chilean station, and then proceeded along the inward glaciated slopes of Mount Pond, the highest point on the caldera rim, moving toward the British station. This eruption created a fissure over two miles long and up to 600 feet deep in the glacial ice. The fissure probably followed one of the ring faults that led to subsidence of the originally conical volcano to produce the volcanic caldera. Volcanic ash ejected from the fissure was deposited as a thick blanket on the inner glaciated slope, which was subsequently named Black Glacier. When the fissure reached the slopes of Mount Pond above Whalers Bay, melted glacial ice within the fissure burst out through the open end and flooded down the slope into Whalers Bay, destroying much of the British base and the long-abandoned Norwegian whaling station. The wall of water was up to fifty feet deep and carried huge blocks of ice that caused additional destruction. Volcanic bombs up to fourteen feet thick rained down from the boiling clouds of volcanic ash. A violent electrical storm accompanied the eruption. The five men fled from the British station and huddled under Cathedral Crags until the Chilean ship, Piloto Pardo, arrived and evacuated them by helicopter. Nobody was on Deception Island during the l970 eruption, but the Argentine Air Force flew photo missions over the island immediately thereafter. The new island in Telefon Bay had been completely incorporated into the caldera rim and several new inland craters had appeared near the two centers of the l967 eruption. The largest and deepest of these craters had blasted away the front of a glacier that flowed down the inner slope of the caldera rim. Studying the calving dynamics along this ice wall, initially 100 m high, and the response of the glacier to losing its terminal ice lobe, was to become a major focus of my glaciological research in subsequent years.

The First International Deception Island Volcanological Expedition was organized following the l2 August l970 eruption. It consisted of nine scientists, three Argentines led by Nestor Fourcade of the Argentine Antarctic Institute, an Englishman (Peter Baker) and a Scotsman (Ian McReath) from Leeds University, a Russian (Leonid Govorukha) from the Arctic and Antarctic Research Institute in Leningrad, an American (Charles Shultz) from Slippery Rock State College, and two from the Institute of Polar Studies, Olav Orheim and me. Two Chileans arrived later. One from the Argentine group, Litterio Villari, was an Italian volcanologist and Olav was Norwegian, so eight nationalities were represented. I was Olav's field assistant. Following the l967 eruption, he had begun a mass balance study on Deception Island and on Livingston Island, 20 miles to the north. After the l969 eruption, Olav concentrated on measuring annual dust layers on the wall of the fissure on the inner slope of Mount Pond. Westerly winds swirling within the Deception Island caldera constantly sweep up dust (volcanic ash) from the unglaciated slopes and deposit the dust on the glaciated slopes. Partial summer melting of the winter snow cover concentrates the dust into thin layers that can be counted, and the thickness of ice between dust layers can be measured, to produce a record of net annual ice accumulation that goes back in time as deep as the dust layers are preserved in the ice. This study was the centerpiece of Olav's doctoral research. The fissure consisted of three rifts through the ice, aligned like echelon faults. He had measured the mass balance back to 1910 down one rift wall and, during the 1970-1971 Antarctic summer, he planned to core the rift floor to obtain records further back in time. We would use an Acker back-pack drill motor with drilling rods similar to those I had used, without success, on Meserve Glacier during the 1968-1969 Antarctic summer. After Olav had completed his project, he and I were to take a ship to McMurdo Station, and be helicoptered in to Meserve Glacier to remeasure the inclinations of the boreholes I had drilled and logged

two years earlier.

Olav Orheim was on the short side, with a medium build, blue eyes, and light thinning hair. His English wife, Billie, was cute and short, with big brown eyes and black hair. Both were good natured. They took me to the Port Columbus airport, where Olav and I boarded a 7:15 PM Eastern flight to Miami on 29 November 1970. There we took a LAN International Chilean flight to Santiago, with three stops on the way. I asked the ticket agent if one stop was Havana, since Chileans had just elected a Marxist, Salvador Allende, as President. “Not yet,” he replied. We landed in Santiago after 2 PM the next day. Walls on the road into the city announced Allende’s victory with painted slogans and the flags of Chile, Cuba, and Soviet Russia. “Cuba is not alone!” and “Liberated America” were typical slogans. Allende was the first elected Marxist president in Latin America, which caused great consternation in the U.S. State Department. Santiago had not yet taken on the gloom of Marxist cities in Eastern Europe and Russia. The government buildings were impressive and surrounded a large park. The natural setting was spectacular, with the snowclad Andes hovering over the city, protecting it. Chileans were darker and much shorter than Americans, and some had Indian features. About two or three percent had blue eyes. Fair hair was more rare, except among children. Street venders peddled items like electric cords, paintings, crosses, and peace symbols. The girls were quite pretty, and men always wore a coat and tie.

We took a morning flight to Puerto Montt, the main town in the lake district where the Chilean fjordlands begin, before continuing to Punta Arenas, the Chilean port on the mainland side of the Strait of Magellan, opposite *Tierra del Fuego* (the Land of Fire). Punta Arenas had about 70,000 people and was growing rapidly. Olav and I stayed in *Hotel Cabo de Hornos* (Cape Horn Hotel), where our bedroom overlooked a beautiful lush park in the center of town. Behind the park was a picturesque old stone church, and brightly colored houses covered the hillside beyond. The day was calm, but we were told that the Westerlies could blow cobblestones off the streets on windy days. Olav and I went straightaway to the shipping company that stores Antarctic supplies for the U.S. National Science Foundation (NSF). The NSF representative was Senor Gonzales, an impressive big man, about 6 feet 2 inches and 250 pounds, with no obvious fat. He spoke English and helped us in every way. We visited with him after we got outfitted. He said Allende hadn’t made many serious changes and he wished the man well, so Allende had some good will among middle class Chileans. Senor Gonzales recommended a restaurant that served *Centollas* (King Crabs), which were in season, and a mutton dish that was a specialty in southern Chile. Both lived up to expectations.

After supper, Olav and I were invited to the home of a Chilean professor whose boy, age l2, will be entering the John F. Kennedy School in Punta Arenas, where all classes are taught in English. The professor played Chilean music for us on their phonograph, and then an album of military songs from various nations. The Italian army song sounded like a ballet; very light and non-military. I said, “It does not sound like fighting music.” “They are running,” was the reply. A Russian soldier’s song called Meadowland (I believe), was next. Rich, deep, full-throated male voices sang a humorless, measured song that conjured up the image of an army marching slowly and inexorably across Europe, like the Golden Horde of Genghis Khan. After our visit, the professor drove us in his new car to a hilltop where we could see the city lights spread out in all directions, and the natural gas fires burning on *Tierra del Fuego*. Natural gas provided the electrical power for Punta Arenas.

The next morning, Senor Gonzales took us to the airport, where we caught a flight to Rio Gallegos, an Argentine boom town in southern Patagonia. The terrain along the way was flat, treeless, and spattered with small volcanic cones. A few rivers imprinted green ribbons of vegetation on the brown landscape. Olav and I were to board an Argentine ship in Ushuaia, the Argentine town at the southern end of *Tierra del Fuego*, and billed as the southernmost city on Earth. Ann, the woman at the government tourist office, was descended from British sheep herders who immigrated to the Falkland Islands and then to Patagonia. British families in the two regions are all interrelated by marriage, but they were now

marrying into Argentine families after three generations, and Spanish is replacing English as the language spoken in homes. Ann spoke English with a Spanish accent. Children in Argentina had to be given Spanish names from a government-approved list. Mail to and from the Falkland Islands went by way of Uruguay, since Argentina claims the territory, calling them the *Islas Malvinas* (Malvinas Islands), and direct mail would compromise its claim. The Argentines even conquered the islands, briefly, 12 years later.

Senor Gonzales had told us that LAN Chile had flights to Easter Island and Tahiti, with connections to Australia, where many Patagonian sheep farmers (often of British ancestry) go to study new farming and breeding methods. The tourist office had a library on the history, economy, and geography of *Tierra del Fuego*, with books in Spanish and English. I read about the activities of British farmers and missionaries in the region. In a chapter on European diseases that decimated the native Indian tribes (Yahgan, Ona, etc.), I came upon an entry written near the turn of the century that reported the closing, one by one, of all the Anglican missions, with "due to the extinction of the Indians" written in parentheses at the end. Blond hair and blue eyes were not uncommon in Rio Gallegos, especially among the children. Olav and I paid a visit to the British Club, which was a tavern where people threw darts and played billiards.

After two days in Rio Gallegos, we boarded a flight to Ushuaia, circling the barren, bleak, rocky offshore islands before landing. We were met at the airport by Nestor Fourcade, and his assistant, Julio Marino, both of French descent, from the Argentine Antarctic Institute. Dr. Fourcade had intense eyes, was slim, and had the flair and elegance that is common with high bred Latin American families. Ushuaia was a bustling, growing town nestled among snowcapped peaks, one of which was Mount Olivia, the highest in *Tierra del Fuego*. Racquel Bereto, a swarthy, sweet-faced American girl, had accompanied us on the flight and joined us later at the Albatros Hotel. She was born in Brazil, came to America when she was five, majored in Romance languages at Berkeley, and had returned to Brazil for a visit. Racquel had traveled on many of the new road and river routes in Brazil, which I wrote down for future travels. She said, "Dr. Fourcade is the ultimate Argentine; proud of his country, his Latin heritage, and his pure blood. I saw people with obvious Indian blood on the pampas." At the hotel, Dr. Fourcade introduced me to Dr. Lillo Villari, from the Catania Volcanological Institute of Italy, a black-haired, robust man with a robust humor. I also met Peter Baker and Ian McReath, from Leeds University. Peter was a sharp-faced bespectacled Englishman and Ian was a ruddy-faced Scot. Both were of average size and in their thirties. Racquel joined us all for supper at the hotel.

Ian, Racquel, and I were seated at one end of the table and got to visiting. I mentioned that Dr. Fritz Loewe, the German meteorologist who had been with Alfred Wegener on the ill-fated German expedition over the Greenland Ice Sheet, worked summers at the Institute of Polar Studies. I recalled a party at which the conversation drifted into World War II and its aftermath. Fritz had said, "I forgive the Poles for taking Pomerania and Silesia from Germany." That prompted Ian to point out that Adolf Eichman said at his trial in Israel, "I forgive the Jews." Fritz was a Jew but Ian had no way of knowing that. Also, the German commander who put down the uprising by Jews in the Warsaw Ghetto remarked at his trial in Nuremberg, "They were a great threat to the German people! But I forgive the Poles!" Over the days ahead, Ian and I (and Peter occasionally) exchanged dialogues in simulated German accents. Most of them had to do with protests made by German war criminals at the Nuremberg trials. Here are some examples that I wrote down.

"Var? Zere vas a var? I know nozing of zis. I vas vit Schweitzer in ze Peruvian jungle!" "But Dr. Schweitzer worked in Africa." "*Ah so*! So zat's vy all ze Indians vere black! Ve zot it vas ze *plague*!"

"You zay Belsen vas an extermination camp? Zis iss *vantastich*! Ve zot it vas a *zoap factory*!"

“Ve had to destroy zem. Zey var *starvink*!”

“Vorld Var II? Ah so! So *zat* vas ze reason for all ze tanks ge-shootink and planes ge-bombink! Ve zot it vas *urban renewal*!”

“Var criminal? You say I am a *var criminal*? Zis is *vantastich*! I am a doktor—a *surgeon*! All zos medical experiments var to test ze theory of survival of ze fittest, as taught by Darvin, an *Englishman*!”

“Ve did nozink! Ze Jews valked into ze ovens. Zey *ran* into the ovens. They var like lemminks!”

“You should have *seen* zem! Ven ze gas came on zey all charged the door, climbing und crawling all over each ozer, vomitink and defecatink. Zey var like *animals*! It vas *disgustink*! Ve merely vatched through ze peepholes. Ve could do nozink.”

“You zay my factory made crematoria durink ze var? I know nozink of zis! I vas in Africa shootink rhinoceros.”

“You zay I vas an interrogator for ze SS? How is zis possible? I vas vorkink vit missionaries in New Guinea! I haf *malaria*!”

Zey told us zey are God’s Chosen People, so ve made zem into zoap. Cleanliness iss next to Godliness, *Ja*?”

“Yes, ve made lampshades from human skin. Don’t you know it iss better to light a lamp zan curse ze darkness?”

“Ve needed ze gelt from zehr teeth to support ze *var effort*. Zey var contributink to ze devence of ze *Vaterland*. Zey should haf been *proud*!

At ten o’clock that evening, we were invited aboard the *Zapiola*, the Argentine naval ship that would take us to Deception Island. The bridge had old-fashioned brass fittings, with yelling tubes to call orders to the engine room and other places on the ship, and a wonderful mahogany helm with handles for turning the rudder. I was told that it was renamed from an American ship that would have been scrapped if it wasn’t given to Argentina. Many of the officers had been trained in American naval colleges. After punch loosened us up, we all had fun singing Argentine, Italian, French, British, and American songs. Dr. Fourcade was very good on the guitar. We finished up with toasts and left the ship at 2 AM. Tied to the dock was a two-masted lateen-rigged wooden bark about 40 feet long, with a beautifully carved bowsprit. It had a screw propeller driven by a diesel engine to supplement the sails, and a low cabin that was mostly below deck. Two Italians had sailed to Ushuaia from Italy, and they planned to continue to Antarctica. The captain and owner needed four or five men to cross Drake Passage, but the locals thought he was nuts. The Argentine government made him sign a statement relieving the *Zapiola* from responsibility to rescue the bark in case of trouble.

The next day we met the Director of the Argentine Antarctic Institute and the Admiral of Antarctic Naval Operations on the *Zapiola.* Then Olav, Peter, Ian, Racquel, and I hired a taxi to drive us around *Tierra del Fuego* as far as Garibaldi Pass, the lowest point on the cordillera. He had discovered the pass; he wasn’t the Garibaldi who unified Italy. After an evening supper with the Director and his family, we discovered that the Institute had paid our hotel bill, and we boarded the *Zapiola*. I helped Julio Marino carry the Institute baggage onto the ship, toting twice as many bags as he did per trip. He told everyone about it in amazement, but they weren’t heavy at all. Ian, Julio, and I shared quarters with the petty officers. We left port by midnight. Olav entertained the crew by announcing, “I have been in every whorehouse from Alaska to Ushuaia,” and then elaborating. One in Punta Arenas had both sheep and

llamas for the discriminating customers. “Llamas are higher, so you won’t skin your knees,” Olav informed them.

Drake Passage was calm during our two-day crossing. Meals were served by the chamberlain, a quiet boy who never changed his shy-serious expression and was very unobtrusive. He would be competent in the finest homes. Ian had spent several years in Zambia, Rhodesia, and South Africa. His comments reinforced my impressions formed during five months in Africa. We played poker with two petty officers. One, Ramon, had the broad face, high cheekbones, and reddish complexion that suggested Indian blood. The next day at dinner, one petty officer bent a toothpick in the middle, made other bends, and then put it on the table so that it looked like a pair of legs supported on their heels and rump. Then he put a drop of water in the “crotch” and the “thighs” parted. The chamberlain *smiled*.

On the morning of the third day, 8 December 1970, we anchored at *Cinco de Mayo* (May 5th) Island (like the Fourth of July for Latin Americans, which is interesting because the British call it King George Island). The Argentines, Chileans, and Russians had stations there. The Russian station was named after Fabian von Bellingshausen, captain of the Russian expedition that had sighted Antarctica in 1820. One of our officers departed on a landing boat. Later, a smokestack belching smoke came toward the *Zapiola* from the Russian station. As it got closer, we saw a low cabin below the smokestack with wipers frantically trying to maintain visibility through the windshield as waves broke over the top. When it was alongside, I saw from the outline below water that it was a large amphibious vehicle like one on land beside the Russian station. A trap door opened on the roof of the cabin, smoke billowed out, and two Russians emerged from the smoke, black with soot. They were the political official at the station and the Russian scientist, Leonid Govorukha, who would accompany us to Deception Island. Our officer returned, and the *Zapiola* left the island, a bleak and nondescript place with glaciers plunging into the sea. The sky was ragged and gray, and a cold, biting wind cut through our clothes.

Deception Island appeared out of the mists around 7 PM. A heavy black cloud covered the summits of the caldera, the only black clouds on the horizon. We “steamed” southward along the east side, which was a fault line, absolutely straight for five miles. A glacier extended along the entire length and ended as an ice wall 200 feet high, from which slabs of ice calved onto a black beach of volcanic ash. We rounded the southern end of the island. To the left of Neptune’s Bellows, a huge rock, weirdly carved by wind, cast a black silhouette of dancing demons from Hell against the ragged sky. Alongside it lay the rusting hulk of an old whaling ship. A giant iceberg drifted beyond the rock in silence, a white phantom with intensely blue veins and splotches, making a striking contrast to the black monolith guarding Neptune’s Bellows. The *Zapiola* continued circling Deception Island. Soon the glaciers on the west side came into view, entering the sea as cliffs of ice. On the northeast side, many waterfalls tumbled in lacey streams over a rampart hundreds of feet high. Then we rounded Macaroni Point, named after a rookery of Macaroni penguins, and duplicated our earlier course until we returned to Neptune’s Bellows. This time we passed through and dropped anchor in Port Foster, the flooded crater of the caldera. It was nearly midnight and too grey to see anything clearly.

The next morning, 9 December 1970, the two Brits, Olav, and I went ashore in Whalers Bay to inspect the damage to the British station and the Norwegian whaling factory. Small airplanes could land on the long beach, and the hangar was largely intact. A single-engine airplane of the British Antarctic Survey was partly dismantled, with its wings in the hangar and its fuselage outside. Olav and I took pictures of each other in the cockpit. The flood from the rift during the 1969 eruption had left a thin layer of volcanic ash over the whole area, and had ripped coffins from the ground in the Norwegian cemetery near the whaling factory. Across a nearby lagoon, crosses bearing Spanish names marked the undisturbed graves of six crewmen from the ship, *Saragossa*. The British Antarctic Survey ship, *John Biscoe*, and the Chilean naval ship, *Piloto Pardo*, which had rescued the six Brits during the 1969 eruption, came into Port Foster through Neptune’s Bellows later in the day. That evening, we visited with Captain DuPuy and

officers of the *Zapiola* in the pilot's bridge. On the wall behind the helm was a large picture of Christ behind the shoulder of a pilot at the wheel on a stormy sea. The captain asked me if I knew who that was. When I answered and said I was a Catholic, he said he would be the deacon at a lay Mass on Christmas Eve. I told him that I would like to attend.

We went ashore at the Argentine station the next morning. It had been boarded up from the inside after the recent eruptions, and I was invited to force the doors, which I did while Olav took movies. The captain wanted us to stay in the tool shed, rather than the main building, since it was easier to heat and to close up on short notice, in case of another eruption. A lot of smoke had appeared across Port Foster, in the vicinity of the earlier eruptions. It was snowing and blowing the next day, so we mostly stayed inside the shed. The concrete jetty was separated from the beach at high tide, so at low tide I filled several 50 gallon barrels with gravel and carried them to the shore, where I placed them in a row across the gap that was underwater at high tide. Then I put wooden planks over the tops of the barrels, so people could bring supplies from the ship in a dinghy to the jetty, and then carry them over the planking to the shed, even at high tide. This gave me the reputation of being a strongman, although I had never been interested in bodybuilding or weightlifting. Anything I had along those lines was just my natural endowment when I reached maturity. As a boy, I was just average in size and I hadn't fully grown or filled out until after I was twenty. Be that as it may, I had to share with the others what I saw at the world championship competition in bodybuilding and weightlifting that was held at The Ohio State University earlier that year, 1970. Bob Hoffman was there as a judge. By then he was an old man, but he still looked strong and he walked toward the competition building sporting the famous "walking pose" that appeared on his *Hi-Proteen* boxes in health food stores. But the two who stole the show were Arnold Schwarzenegger in bodybuilding and Vasili Alexeyev in weightlifting.

Arnold Schwarzenegger

Arnold was still an Austrian citizen, as I recall, and in his early twenties, but even then his star qualities were obvious. He performed in the heavyweight competition, and he was the biggest of the finalists, at about 6 feet 2 inches and 250 pounds, all muscle. Despite yard-wide shoulders, enormous arms, and massive thighs, he had a small waist and tight ass that drove all the women and homosexuals crazy. But what really brought the crowd to its feet was the way he posed, and brought out the definition in his muscles. Each muscle group was perfectly sculptured and in balance with every other muscle group. His abdominals were perfectly symmetrical and box-like, not offset and unbalanced like some other competitors. His pectorals were like square slabs of beef inches thick. When he spread his lats, he looked like a cobra spreading its hood. His flexed calves were wide and shapely, but they tapered down to thin ankles that made them look even bigger. When Arnold posed, he commanded the rapt attention of everyone in the large auditorium. His body movements were rapid and dramatic between poses, but he held each pose as if it were cast in bronze. The competition ended with a "pose-off" between the three finalists, during which they were all supposed to go through their posing routines together. Before the pose-off ended, the other two had stopped posing and were looking at Arnold with their mouths open as he completed his final movements with the audience going wild. All of the body builders had superb bodies to show off, but what really made Arnold shine was not the size and definition of his body, or his dramatic flair. It was his personality. He acted whereas the others merely performed. From the very start, Arnold acted as if he had already won and the other competitors were just spectators. He had boyish good looks and he constantly wore a wide grin and flashed his white teeth. Humor was an integral part of his performance, and he acted like he didn't take himself too seriously. He seemed to really enjoy his performance in a display of narcissism that nobody thought was acting, even if it was. But isn't that the key to great acting? As the world learned, Arnold went on to a fabulous Hollywood career in which he played roles ranging from mythical characters like Conan in *Conan the Barbarian* to a beleaguered teacher in *Kindergarten Cop* to a cyber-robot in *The Terminator*.

Impressive as Arnold's performance was, he got trumped in the weightlifting competition by another superb actor, the Russian champion, Vasili Alexeyev. In the super-heavyweight competition between men weighing over 300 pounds, the three finalists were the American, Joe Dube, a Belgian, Serge Redding, and Alexeyev. All three had cleaned and jerked 500 pounds in training, and everyone anticipated that this feat would be accomplished first in competition here. Alexeyev was the lightest of the three, at just under 6 feet 2 inches and more than 300 pounds. The shortest but also the beefiest with the biggest arms, legs, and chest, was Redding. Dube looked like a big fat slob. Alexeyev had the biggest belly. The three traditional lifts were the snatch, where the weight lifter grasps the bar from a squatting position and heaves it overhead in one smooth movement as he rises to his full height; the press, where the weight lifter raises the bar to his shoulders in one movement and then presses it to full arm's length overhead using just arm power; and the clean-and-jerk, where the lifter also raises the bar to his shoulders (the clean) and then takes a step forward and bends his knees to get under the bar as he forces it overhead with a combination of arm and leg strength (the jerk). The winner is he who hoists the most weight for the three lifts. The press had been dropped prior to this competition, so the snatch and the clean-and-jerk were the only lifts. Alexeyev won them both and, therefore, won the overall competition. He made his lifts seemingly without effort from beginning to end, although more steel plates were added to the bar after each successful lift. Dube and Redding made the earlier lifts easily, but they were soon struggling, and they couldn't make the later lifts at all. Alexeyev just kept going. It wasn't obvious just how much weight was being hoisted until we saw the bar bend as the lifters cleared it from the mat and we watched the pile of weights vibrate at the ends of the bar as the lifters held it overhead. If that didn't make the point, when the green lights from the three judges went on, signaling a successful lift, the lifters let the bar and weights drop from extended arms' length back to the mat, where they bounded back up several feet again and again with a great clashing and clanging, sending out vibrations that were felt in every seat of the auditorium. Then there was always a stunned silence before the audience erupted with wild yelling, clapping, and stomping.

After Alexeyev was awarded his first-place medals, not just for winning the competition, but also for setting new world records in the process, the announcer went to the microphone and informed the audience that Alexeyev would now attempt to lift 500 pounds overhead in the clean-and-jerk for the first time in competition. This is what everyone was waiting to hear, and the place was bedlam. When the announcer had quieted the crowd, the attendants added more steel discs to the bar, while Alexeyev went to a side table and put more resin on his hands, seeming to ignore the bar completely. He took a towel, wiped his face, and laid the towel back on the table, all very nonchalantly. Like Schwarzenegger, Alexeyev was the consummate showman. He was only 28 years old, with curly black hair, bushy eyebrows, a pug nose, and double chin. Then he strolled (that's right, he strolled) over to the bar, and stood behind it. He looked down at it with a hint of contempt. Then he squatted down and spread his oaken arms wide as he gripped the bar with beefy hands, adjusting his grip until he was satisfied, looking first at one end and then at the other. His big belly hung over the bar like a threat. All of a sudden the bar was off the mat, Alexeyev was standing, and the weights were vibrating at the ends of a bar that was now bowed across his chest at shoulder height. When the vibrations stopped, Alexeyev took a quick step forward, bending his knees like a runner waiting for the starting gun, and then drove the weights overhead as he completed his forward step and straightened his legs. The bar bowed up and down between his outstretched arms, and the weights at the ends rose and fell in unison with the waves of applause, Russian style, sweeping toward the stage amid unrestrained whooping and yelling. Even then, Alexeyev wasn't finished. He turned his torso to the right and left above his hips, while keeping his legs rigidly planted, so the weights swung in great arcs, before he let the whole mass come crashing down on the stage to bounce crazily about on the mat while he calmly walked away, returning to the table to wipe his face and hands. What a show! I never saw the like of it.

Then Alexeyev returned to center stage to take his bows. Joe Dube and Serge Redding brought out a huge gold cup about five feet high, each holding one of the handles, and put it down to the left of where Alexeyev was standing. A shapely blonde in a bathing suit appeared from the right side of the stage, tiptoed up to Alexeyev, and planted a kiss on his cheek. Alexeyev looked down at her and then looked down at the cup. He gripped her tiny waist between his right hand and his wrist, grabbed one handle of the cup with his left hand, and effortlessly hoisted them both overhead at arm's length, once again rotating about his hips so everyone in the auditorium could see that he had captured both the girl and the gold. The place went absolutely ape. Flashbulbs went off from everywhere in the auditorium as the lights dimmed, causing a silhouette twenty feet high of Alexeyev and his twin prizes to dance on the bare wall behind the stage. He was King Kong, the Eighth Wonder of the World.

After I had related all this to my companions on Deception Island, they should have been less impressed with my ability to carry barrels of gravel. There is lifting and there is *lifting*.

Because of the bad weather, not much work could be done so we spent the day in the shed and entertained one another with stories. Ian and I exchanged Nazi dialog all evening. The *Zapiola* officer in command of the launch managed to sink it in the high surf near the jetty, so everyone in the launch was soaked and had to spend the night in the main building. With my best Prussian accent, I announced to the people in the shed, "In Germany ve vould haf hat him *shot*!" Eating thick Argentine steaks and pork chops for supper went a long way toward keeping everyone in a festive mood, despite the weather.

The wind was still strong but snow had stopped falling by morning, so Ian and Pete went to inspect the sites of recent volcanic activity, while Olav, Leonid, and I hiked up the hogback to the snow-covered ridges on the western rim of the caldera. Olav dug a pit in the snow and showed us the ash layer from the 1969 eruption, but there was no ash layer from the 1970 eruption. Olav and I wanted to slide down the snow slope, but Leonid was afraid of avalanches. He was a mountaineer and once was buried under an avalanche for two days in the Caucasus. While he prepared a rope line, Olav and I slid down. It was great fun and there was no avalanche. Leonid had climbed to 25,000 feet in the Pamirs and six of his twelve climbing companions had died from mishaps in the last 20 years. Back at the Argentine station, the swamped launch that had been filled with water and half buried in ash at high tide was being dug out at low tide. Pete and Ian returned to tell us that in the seismically active area they found pools that were warm enough for bathing, if we could stand the smell of sulphur.

Olav was conducting mass balance studies on the glaciers on the south rim of the caldera, where the highest point is called Mount Kirkwood. He, Leonid, and I went there the following morning, walking along the ash beach strewn with whale bones and past some of the big tanks used by the Norwegians for storing whale oil after the blubber was boiled down. The tanks had floated across Port Foster in the floodwater currents during the 1969 eruption. We climbed a series of huge ice terraces to Olav's glacier. He dug some snow pits to look for the ash layer, and probed the snow with a long rod to locate the icy layer that marked refrozen ice from last summer's melted snow. We also looked for bamboo poles he had put in the snow the year before, to record how much snow had accumulated since then. Over the ice divide, we could clearly see the mountainous spine of the Antarctic Peninsula on the eastern horizon, illuminated against a leaden sky by the sun as it lowered through cloud layers in the west. Giant icebergs sparkled in a black sea.

Leonid turned 39 the next day, 14 December l970. He wore a black suit and a white shirt with a high, stiff, starched collar for the occasion. Leonid produced a bottle of Georgian cognac, Olav a bottle of Smirnoff's Vodka, and Fourcade produced an Argentine cognac-orange juice drink. I developed a cold and fever that lasted through the next day, when the weather again turned sour. The US Coast Guard

icebreaker, *Burton Island*, brought the Pennsylvanian geologist, Chuck Schultz, and Bob Dale, the USARP representative, in by helicopter the next day. I hadn't been doing my share of work with cleaning and dishwashing since my cold and, by the fourth day, Fourcade said they needed my "strong back." I replied, "To go with my weak mind?" "No! No!" he insisted, "I think you are as intelligent as Morino" (Fourcade's student field assistant).

I was fully recovered by 18 December l970, so Chuck Schultz, Leonid, Olav, and I hiked over to the area of the recent eruptions. On the way, we passed a small glacier on a slope of about 45 degrees that would be ideal for studying ice dynamics. Its accumulation area was well defined, lying between rocky ridges, and its ablation area was a perfect ice lobe. Basal ice at the snout was clogged with eroded ash and stones. We climbed to the rim of the caldera and got our first look at the terrain affected by the three eruptions. It looked like a moonscape, pitted with craters and torn apart, with steam rising from vents everywhere. Chuck went on while we dug some snow pits. Afterward, Olav and Leonid returned to the Argentine station, but I wanted to see the big penguin rookery over the caldera rim opposite the station. Vertical cliffs hundreds of feet high abruptly gave way to rolling hills that extended down to the seashore. As I rounded one hill, I suddenly saw the vast rookery spread out before me. There were tens of thousands of penguins, sending up a deafening din and making the hills look like gray mounds heavily sprinkled with salt and pepper. These were Chinstrap penguins, feisty little birds so named because a black band of feathers goes under their bills and joins a cap of black feathers, like the chin strap of a helmet. Males and females took turns sitting on one or two eggs in their nests made of smooth pebbles, while the other parent went fishing. Penguin guano radiated in white streaks from the nests, forming intersecting patterns over the gray earth. One attacked me when I got within four feet, but if I remained still their natural curiosity brought them right up next to me. Their eyes were on the sides of their heads, so their heads had to point sideways when they looked at me. It gave the weird effect of seemingly being ignored by them when in fact they were all watching me closely. Down by the shore, penguins were standing in lines watching the rollers break in. When the lead penguin dove in to go fishing, all the others followed, looking like tumbling dominoes. They fed on small shrimp-like creatures called krill. They would regurgitate krill down the gullets of their mates, and later their chicks, after they returned to the nests.

Fourcade informed us the next morning that the captain of the *Zapiola* had invited us all onto his ship for showers and dinner, and then he would order the launches to take us to the area of recent eruptions on the opposite side of Port Foster. This was most welcome, as it was a return to civilized living on the ship and walking to the eruption sites was a seven-mile hike over rugged terrain. Chuck had told us that walking there and back left little time for working at the sites. The launches took us to the beach of a new cove formed by the largest crater. Vertical walls rose some 80 feet from the sea. Hundreds of dead krill had washed onto beaches below the cliffs from places where submarine fumaroles had heated water to the boiling point. A hardpan plain above the cliffs was littered with volcanic bombs. Mud-spattered rocks testified to fierce horizontal blasts of mud from the craters, like the basal surge under a mushrooming atomic cloud. We saw the tent where Pete and Ian had been staying, but they weren't there. Steam whistled through cracks in the hardpan, sounding like dozens of singing teakettles and bathing the whole region in mist. Two craters overlapped, and water in the bottom of the higher crater spilled over into the lower crater as a cataract. The 1967 eruption had produced a large amphitheater, which we circled and came upon three smaller craters, each about 200 feet across and deep. A yellow pool was in the bottom of one and a green pool was in the bottom of another.

I continued climbing the slope of the amphitheater until I reached the edge of the large crater with the waterfall at the near end. It was much bigger than the others, some 1500 feet across and 300 feet deep. The far end was a calving ice wall, where the crater had blasted through the snout of a glacier creeping down from the caldera rim. This glacier and its calving front were to become the focus of my first

research proposal funded by the National Science Foundation two years later. Beyond the crater and above the ruins of the Chilean station, we saw the rift produced during the 1969 eruption that extended across the inner slope of Mount Pond all the way to Whalers Bay, where the flood of water from the rift had inundated the British station and the old Norwegian whaling factory. I made my way carefully down the side of the crater closest to the sea so I could get a picture of the waterfall. Afterward, as I was walking across the floor of the crater, the ground began to sag under my feet. Then it gave way and I sank into the mud. I had to fall to my hands and knees to keep from being swallowed up by the crater. Nobody was with me, but I finally managed to wallow to firmer ground, got out of the crater, and rejoined the others. Over an hour later, the launch returned and took us to the *Zapiola* for supper. I ate two steaks and four slices of pizza, twice as much as anyone else. Then we were dropped off at the Argentine station. Pete and Ian were there, but Pete was asleep. Ian and Lillo Villari discussed until midnight the volcanic area we had visited.

The next day, Villari, Fourcade, and Moreno went to the eruption site. When they returned, Fourcade grabbed the phone on the wall of the shed where we were staying, and began talking excitedly into it. Then he turned to Olav and said, "Olav! It is Palmer Station! They want to talk to you! Hurry!" Olav was eager to speak to the USARP representative, Bob Dale, who was at Palmer, so he ran to the phone. But when he talked into it, he realized it was dead. Everyone had a big laugh. Pete and Ian were leaving for Buenos Aires in a week, so they asked Fourcade about hotels there. I recommended the *Casa de Gato* (Cat House). Fourcade looked puzzled, until someone explained to him that a Cat House was a whorehouse in American slang. That got a laugh. My journal is full of anecdotes of this sort, but these two are enough to convey the general flavor of eight men living together in a small building on Deception Island.

One day later, the *Hero* arrived in the morning and dropped anchor in Port Foster. The *Hero* was built in Maine for biological research in Antarctic waters that was funded by the National Science Foundation (NSF). It had two masts with lateen-rigged red sails and a wooden hull that would bend instead of break in sea ice. It was named after the ship that Nathaniel Palmer commanded when he discovered Antarctica in 1819. It also had a diesel-driven screw propeller for general navigation. The sails were used when the *Hero* had to navigate quietly in waters where birds and seals congregated for feeding, nesting, and giving birth, so the biologists could study them without having them frightened by the noise of the diesel engine. A photographer for the National Geographic Society, Bill Kurtsinger, and the USARP representative on the *Hero*, Mike, came ashore in a Zodiac, which is a horseshoe-shaped rubber raft with an outboard motor attached to the wooden transom across the back end. At full power, a Zodiac can rise up on the water and hydroplane over the surface. Bill had been a Navy photographer at McMurdo, and he came to Meserve Glacier when I was working there two years earlier. He recognized me at once and told everyone, "Nobody at McMurdo will ever forget Terry Hughes!" Don, the cook on the *Hero*, brought a chocolate cake he had baked that was shaped like Deception Island, with an empty center, an opening on one side, and white frosting on top to represent the glaciers. We all gathered around it for a group photograph in front of the shed. Then we helped *Hero* crewmen (a redheaded Irishman named Murphy and a butterball German named Hans) unload supplies and we went aboard ship for a proper meal. Then the *Hero* weighed anchor and sailed away, leaving the Zodiac for our use.

The Zodiac got full use the next day. The captain of the *Zapiola* got word that the son of one of the crewmen was dying, and he had decided to take the man back to Punta Arenas. Both of the launches were out of order, so we used the Zodiac to transport Pete, Ian, Lillo, the Argentines, and their equipment back to the *Zapiola*. Then we all had a "last meal" aboard ship. Before Leonid, Olav, and I got back into the Zodiac, I told Pete and Ian, "Remember. Der Fuehrer expects every man to do his duty—but we forgive him." As we were pulling away, they gave me a "Nazi salute" from the bridge of the *Zapiola*. I stood at attention in the Zodiac and clicked my heels. Leonid fired off a signal flare, which hung in the air

until we landed on the beach. It was about 1 AM. As we crawled into our sleeping bags inside the shed, I said to Olav, "Tomorrow we will probably get a call from them saying they are sinking and we must bring the Zodiac to rescue them."

In the morning, we took Chuck across Port Foster in the Zodiac so he could see the big crater that had blasted through the glacier. The rest of us then continued the mass balance studies on Olav's glacier until dark clouds moved in, signaling bad weather. We went back to get Chuck and by then the wind had whipped up big waves on Port Foster, so it was a rough ride. Chuck was as excited about the crater through the glacier as I had been four days earlier, when I first saw it. The bad weather continued through the next day, Christmas Eve, so we stayed in the shack, cooked bacon and eggs for breakfast (supplied by the *Hero*), and began visiting. Olav started bragging about all the women he had screwed and Chuck joined in. That led to a heated discussion of sexual morality, or lack of it. It was an unpleasant way to spend Christmas Eve, so I dropped out of that conversation and joined Leonid, who didn't understand English enough to participate. I drew a map of the world for him, and sketched the route of my travels in 1966 and 1967 through the Soviet Union and around the world. That led to a much more pleasant discussion about politics and people, especially similarities and differences between Russians and Americans. Olav and I cut up steaks for a late supper. The *Hero* had left us a radio, and Olav was able to contact Palmer Station around midnight. We all sang "Merry Christmas to Palmer Station" to the tune of the *Happy Birthday to You* song.

Bad weather continued on Christmas Day. Chuck tried to walk to the crater blasted through the glacier but he made no headway. He soon returned and said, "I was walking along the beach into the wind when this shadow covered me. I looked up and saw a skua flying just over my head, keeping pace with my walking and looking down at me." Skua gulls are big, nasty, and have attacked men on occasion, going for the eyes. I spent much of the day getting to know Leonid better. He was a small, balding Russian who had worked at all the places where the Soviet Union conducted glaciological research; Franz Josef Land and Severnaya Zemlya islands in the Russian Arctic, on Taimir Peninsula in northern Siberia, in the Pamir Mountains in Central Asia, in the Caucasus, and in Antarctica. He was in one of those places almost every year since 1956. Leonid even worked on Victoria Island in the Canadian Arctic. We felt a slight earthquake tremor in the afternoon. Olav managed to get radio contact with the *Bahia Aguirre*, an Argentine naval ship, in case we had to be evacuated during a new eruption.

The day after Christmas the weather was good, so we all took the Zodiac over to look at the glacier crater (as we now called it), stopping long enough to inspect an iceberg that had blown in through Neptune's Bellows during the storm and had grounded near the Argentine station. It was wind-sculptured enough to pass as modern art. After crossing Port Foster, I led Olav and Leonid to the glacier crater and made my way down to the crater floor for a closer look. I navigated around smoking pools and rivers of mud that looked like ready-mix concrete. They fanned out like alluvial fans below low places high on the ice wall, where mudslides on the ash-covered glacier surface poured over the crater rim from time to time. Rock boulders and blocks of ice were continually falling from the ice wall. Water had drained from the older mud fans, so I was able to climb them to get a close look at the ice wall from various heights up these steep ramps. The ice was full of dust layers and ash bands of the kind Olav had measured in the rift on Mount Pond, after the 1969 eruption. I counted over a half dozen prominent dirt bands in a ten-meter section near the base of the ice wall. When Olav joined me, he said that the higher layers might overlap with the lower layers he had mapped in the rift. In that case, he could extend the mass balance record further into the past, beyond 1910, the oldest layer he had mapped in the rift. The ice wall was 100 meters high, so Olav was hopeful that it might even preserve the ash layer from the 1842 eruption reported by the 1838-1842 Wilkes expedition. Olav took some barometer readings at the top and bottom of the crater wall to get elevations, and we went over to the beginning of the rift above the destroyed Chilean station, where Olav made more elevation measurements. The upper elevation of the crater wall did indeed overlap the

lower elevation of the rift, both the crater and the rift were along the same fault line, and both had erupted through the same ice cover, so Olav was hopeful.

We picked up Chuck and took the Zodiac to the foot of what Olav called "Black Glacier" on the inner slope of Mount Pond, because the 1969 eruption had blanketed the ice cover below the rift with dark volcanic ash, giving it a black surface. Black Glacier ended as a calving ice wall 60 to 80 feet high above a narrow ash beach. Dust and ash layers in the ice wall were twisted and bent into fantastic shapes by the ice deformation, so it was impossible to identify a layer stratigraphy that got older from top to bottom. In any case, barn-sized blocks of ice that had calved from the ice wall were strewn on the beach, and wave action had undercut the ice wall where there was no beach. It was not a safe place to obtain long-term mass-balance records from stratigraphic layers in the ice, and in any case the layers were warped too much to put in chronological order.

The *Piloto Pardo* was returning to Punta Arenas on 26 December 1970, and was supposed to pick up Chuck. He was watching Neptune's Bellows all day and it hadn't arrived when we returned to the Argentine station, so we kidded Chuck that the Chileans had forgotten about him. About two hours later, a helicopter from the *Piloto Pardo* flew over the caldera rim, landed at the Argentine station, unloaded equipment we had ordered from Palmer Station, and evacuated Chuck. It was a good thing. Chuck was in the advanced stages of the Bull-Nye Syndrome that I had first observed at Meserve Glacier in 1969, when a helicopter took out Colin Bull and John Nye (see Chapter 5). That left Olav, Leonid, and me with all the booze that had been unloaded from the *Zapiola* and the *Hero*. There were over a hundred cans of beer (*Argentine* and *Black Label*), big jugs of wine from the *Zapiola*, and several kinds of whiskey, scotch, brandy, and cognac. Leonid said, "From now on we drink the liqueurs and the fine wines, the sherry and champagne. The *Zapiola* wine is for niggers." I was a teetotaler, so it was all the same to me. I took Chuck's mattress, so I had three to Leonid's two. Leonid jokingly called me an "aristocrat capitalist." I made some remark about "Soviet dictators." Leonid said, "Lenin is a giant. Stalin is big, and the rest are average," as he made a big hump with his hand, a smaller hump, and a bunch of ripples. He thought Khrushchev was a grandstander. Brezhnev, he said, was the political commissar of the Soviet division that turned back the Germans at Novorossiysk , a strong fortification near Gelendgik on the Black Sea. He said, "A railroad car received such heavy fire from the fort that there was a bullet hole every centimeter." He said many hero badges were handed out and the railroad car was now a monument that every tourist visited. I was in Sochi, nearby, in 1966 and I would have seen it if I had known about it. The more I talk to Russian veterans of World War II, the more I marvel at their courage and endurance. I hope Americans never have to fight Russians on Russian soil. Leonid wrote a "Merry Christmas" message for Olav to pass on to the other Russians at Bellingshausen Station, by way of Bob Dale at Palmer Station.

The next day we returned to Olav's glacier on Mount Kirkwood to continue his mass-balance studies. We dug snow pits and he showed me how to interpret the snow and ice stratigraphy in terms of annual layers. When I dug a pit myself on a lower terrace of the glacier, I managed to find the ash layer from the 1969 eruption. We hadn't seen it in other snow pits. The day after that, Olav took me to the rift section on Mount Pond where he had measured the annual dust layers going back to 1910. On the way, we visited the abandoned Chilean station at the north end of the rift. Destruction was total. The only thing that survived was a little concrete shrine to Jesus Christ. The 1969 fissure on the inner slope of Mount Pond created three rifts and we followed them all. Between the rift above the Chilean station and the central rift was a weird tumbled region of ice terraces and ramparts between wide, partly collapsed, crevasses. In the central rift, we entered a region of red ash. We had to climb out and circle what looked like a gigantic witches' cauldron. It was a crater that had filled with magma, with ash and cinders forming slag on the surface. A cloud cap had covered the summit of Mount Pond all day and, as we climbed out of the middle rift, we found ourselves in that cloud. We descended into the third rift and continued along a narrow passage between steep ice walls 40 meters high to the place where Olav had made his study of

dust-layer stratigraphy after the 1969 eruption. Giant icicles hung from an overhanging ice balcony on the eastern ice face. Infilling from windblown snow and collapsing ice made it impossible for Olav to dig a pit that recovered the base of his earlier stratigraphic measurements, so we followed the rifts back to the Chilean base. Leonid had found a folding chair amid the ruins and was seated at the beach like a Russian on his Black Sea vacation. He went back earlier, after he twisted his ankle. Back at the Argentine station, he told us that his best friend had fallen into a crevasse 40 meters deep. When they pulled him out he was dead and covered with blood from head to foot. “That picture is always in my mind,” he said.

The ice crater was the occasion of my first professional dispute with another glaciologist. I had come to Deception Island with my own funding to serve as Olav’s field assistant and to develop a glaciological study of my own, if the opportunity presented itself. The ice crater was the opportunity. Olav said I had begun as an ice-dynamics glaciologist on Meserve Glacier, and I should not invade his preserve as a mass-balance glaciologist. My view was that a well-rounded glaciologist should be able to work in both preserves, and I wanted him to teach me his techniques and interpretive skills. I said I would assist him in recording the ice-crater stratigraphy, with no expectation of collaboration in publishing the results, if he would teach me how to do it correctly. He agreed to that, but a new dispute arose when we returned to the ice crater the next day. The ice wall was huge, 100 meters high and 500 meters across. The section of the wall that seemed to have undisturbed stratigraphic layers from top to bottom was also partly under an over-thrusting pile of badly fragmented ice some 50 feet thick that could collapse any time, killing anyone who was working on the ice wall beneath it. To facilitate recording the stratigraphy and to advance my own education in this area, I suggested that Olav show me how he records the stratigraphy and supervise my initial efforts in doing this. Then we could work different sections of the ice stratigraphy, either working parallel but distant sections of the ice wall to improve our accuracy, or working different vertical portions of the same section to reduce the time involved. Olav said that unless he did all the stratigraphy himself, he could not trust the data. I asked him, “If you have so little confidence in yourself as an instructor, and cannot accept the work of someone you personally trained, how can you accept any data in the scientific literature?” It didn’t matter to me how we did it, I just wanted to be trained to do it properly.

Glacial ice was exposed on the full crater depth on the north wall, but only about half the depth on the south wall. Olav would record the stratigraphy from top to bottom on the north wall and I would do the same on the south wall, after he supervised my initial efforts on the north wall. Until we compared our results, it was impossible to tell if stratigraphy on the south wall overlapped that on the north wall or underlaid it. Ice stratigraphy is older the closer to the terminus of a glacier, if the bed is frozen, so ice exposed on the south wall could have been older. If part of the stratigraphy overlapped on the two walls, I would be able to calculate the thickness of stratigraphic layers due to deformation of ice during flow. This would be an important correction to Olav’s mass-balance data, as the thickness between dust or ash layers is the net ice accumulation from snowfall, plus or minus the thickening or thinning of ice between the layers due to downslope compressive or extensive flow of the glacier. If I could determine the deformation rate, that could be converted into an ice thickness that should be used with the measured thickness to give the true ice accumulation rate. This could be my independent study and it would indeed involve an understanding of ice dynamics. To do it properly, however, I would need to construct a surface strain network from the crater to the ice divide, and dig tunnels in the ice wall at various heights, with strain rosettes in the tunnels to record internal ice deformation rates. That would provide the scientific justification for an entirely new research proposal, which I wrote upon my return to Ohio State. It was funded, so I returned to Deception Island two years later, after Olav got his doctorate with his mass-balance study, and I began my first glaciological project with me as the Principal Investigator.

Olav, Leonid, and I beached the Zodiac on the beach below Black Glacier the next day, and re-measured the nine mass-balance bamboo poles Olav had installed in 1969 above the rift where he had

measured annual-layer stratigraphy. We reset the poles and then proceeded up toward the summit of Mount Pond, where we dug a snow pit and located the previous summer layer 1.5 meters deep. We went over the summit of Mount Pond and down the glacier on the east slope that ended at a long fault along the shoreline. Crevasses prevented us from going all the way down, so we returned to the Zodiac by way of the mudflow from the rift that destroyed so much of the British station and the Norwegian whaling factory during the 1969 eruption.

On the last day of 1970, Olav and I returned to the glacier crater and I helped him install the crevasse ladders he would use in mapping the mass-balance stratigraphy on the north ice wall below the perched pile of fractured ice blocks. Olav showed me how to record and interpret the ice stratigraphy in a four-meter vertical section alongside the loose pile. The highlight of the day, though, came during our return to the Argentine station. Anchored just offshore was the *San Giuseppe Due—Roma*, the two-masted lateen-rigged sailing bark we had seen tied up to the dock at Ushuaia. We pulled alongside and were informed by the mate, a very young-looking lad, that we were invited on board at 10 PM to celebrate New Year's Eve. The captain and owner of the forty-foot bark had crossed Drake Passage in the past 48 hours without sleep and was now asleep below deck. At the Argentine station, Leonid was talking to Bob Dale at Palmer Station, while trying to get through to the Russian Bellingshausen station. Leonid said he told Bob that the Italian bark was here, so Olav didn't mention it when he talked to Bob. When my turn came, I wished Bob a happy new year and mentioned that we had unexpected ship support for the next week. He didn't know what I meant, so I explained that the *San Giuseppe Due* had arrived. Bob was surprised. He hadn't understood Leonid well enough to get the true picture. Bob shifted into the USARP mode of semi-panic whenever "tourists" arrived in Antarctica, but this crew could not be classified so casually. Was Christopher Columbus a tourist? Just as we were finishing our supper, the rubber dinghy came toward us from the bark with two men standing in it. They were the young lad and an older blue-eyed grizzled fellow with a ready smile. They introduced themselves as Franco Di Iorio (the youth, an Argentine) and Pier Luigi Airoldi (an alpine climber from Italy). Both being alpinists, Leonid and Luigi hit it off immediately, and chatted as well as Leonid's Spanish could mesh with Luigi's Italian. We gave them the freedom of our liqueur supply, but Luigi chose *Black Label* beer and Franco wanted *Coca Cola* (a boy after my own heart). We put on better clothes and returned with them to the *San Giuseppe Due*, bringing steaks, eggs, and other goodies from our larder.

The boatswain ushered us below deck. I entered a very cozy mahogany-stained dining room, about which a cooking nook, storeroom, and sleeping quarters were arranged. A three-foot decorated artificial Christmas tree stood on the dining table, and Christmas ornaments decorated the walls. We were seated on a bench beside the table and served sherry. The captain entered shortly and introduced himself as Giovanni Ajmone-Cat. He was easily the largest of the men, with big hands and black curly hair, but balding. He spoke English quite adequately. The boatswain, Gennaro Matuchelli, was shorter with dark, deep-set eyes, high cheekbones, and wide jaws in a square face. Giovanni's first concern was to contact the Argentine station, Almirante Brown, by radio to squelch a report that his bark was lost and had sunk. When he said he thought his was the smallest boat to reach Antarctica, Olav said that the harpoon boats on whaling ships were smaller. "Everyone told us we could not do it," Giovanni said, ignoring Olav, "but you see—we are here." I said, "For Italian navigators anything is possible," citing Columbus and Magellan. Gennaro reminded me that Magellan was Portuguese, so I added, "Okay, Marco Polo then. He returned from China by sea." At that, Giovanni suggested we have chicken (the Italian word for "chicken" sounds like "polo"). I mentioned another Italian, Enrico Fermi, whose work led to the Manhattan Project to develop the atom bomb that ended World War II. The coded message from his laboratory at the University of Chicago announcing that he had successfully produced the first stable nuclear chain reaction was, "The Italian navigator has landed in the New World."

Luigi, the alpinist, knew the two Italian alpinists who were at McMurdo Station during my 1968-

1969 study of Meserve Glacier. I actually got to know only the younger and smaller man, Marcello Piussi, because he had visited us at the glacier. Marcello and the other one, Carlo Mori, had been staying at the New Zealand hut on the shore of Lake Vanda, some miles from Meserve Glacier. One day, Carlo squatted down, clamped the edge of the dining table (which seated eight men) in his teeth, and lifted it off the floor as he stood up. His tooth marks on the table have become something of a shrine. I finally met Carlo at McMurdo, after four men dragged a big box full of rocks to the end of a flatbed truck, where Carlo put the box on his shoulders and carried it to the Hercules aircraft that was flying them out. Carlo was not quite my size, but close and without the fat. He wore a fierce expression on a square no-nonsense face with a strong jaw and knitted eyebrows. He had brown eyes and hair, and was a journalist by profession. Luigi knew who I meant, for no sooner did I mention the two alpinists at McMurdo than he filled up his chest and flexed his arms to show he knew who I was talking about. Carlo had a reputation on three continents, Europe, Antarctica, and North America. Luigi himself had climbed Mount McKinley, Mount Saint Elias, and Mount Kennedy in North America.

A few minutes before midnight, Giovanni took out the chronometer he used for fixing longitudes and a bottle of champagne a friend in Italy had given him for the occasion. We produced a bottle of Argentine champagne. At midnight we popped both corks and Giovanni dispatched Franco to blow the ship's horn. It gave quite a blast. Leonid said that when the *San Giuseppe Due* entered Port Foster around 3 PM and blew its horn, he thought a big ship had arrived. The bark was only 25 tons. It was built by hand in Greece to Giovanni's specifications at a cost of about $25,000. On the wall of the dining room was a miniature painting of a single-masted lateen-rigged bark, the *San Giuseppe Uno.* It was painted by Giovanni's sister. We passed the first hours of 1971 conversing as best we could, while a tape recorder played internationally favorite songs in stereo. I thought at the time it was my most memorable New Year, and I would still say so today.

On New Year's Day, Olav invited the Italians to a "famous Orheim steak dinner" at the Argentine base at 8 or 9 PM. The wind picked up and we saw the advancing front of a big blow in the early evening, so we wondered if they would come. But three of them dressed in yellow rain slickers got into their dinghy and came ashore around 8:45 PM and surfed ashore in a higher wind and sea than I had yet seen at Deception Island. I helped pull them ashore. Giovanni was anxious to let the Argentines and his family in Italy know that he had arrived safely in Antarctica. It was close to our scheduled radio contact with Palmer Station or, alternatively, McMurdo Station, so Olav got on our radio. Giovanni kept watching his bark and, when he saw it was not holding anchor, he and the boatswain excused themselves and went back to secure it. By then, four-foot waves were rolling ashore and smashing against the concrete jetty, shooting up big columns of spray. It was a struggle, but they finally moved their small rubber raft off over the incoming whitecaps. I waited outside until I saw them safely aboard the *San Giuseppe Due*. We spent the next hour watching the bark buck the waves as the captain, standing on deck at the engine controls, directed his boat farther out into Port Foster. We decided they would not be back, so we and the alpinist sat down in the shed to enjoy as best we could Orheim's famous steak dinner.

As I was doing dishes, Olav said the dinghy was coming back. Giovanni entered with profuse and unnecessary apologies. He had spotted an iceberg in Port Foster and had to move his bark. Olav said he had passed Giovanni's telegram to Palmer Station as he served the captain and the boatswain three of Orheim's famous steaks. Giovanni only wanted one, explaining, "We Italians don't eat big," so Olav forced the third one on the boatswain, who wailed "Mamma Mia" as he resigned himself to the task of eating two steaks. The *San Giuseppe Due* had a rough crossing in Drake Passage. Giovanni thought Drake Passage was a "bad luck crossing" more than being really dangerous, as a lot of accidents seem to happen there. Giovanni was 37, the alpinist was 40, the boatswain was in his 20s and the sailor, Carlo, was only 19. He was exhausted, so he was asleep on the bark. It was quite an adventure for a lad so young, and I told Giovanni that Nat Palmer was only l9 and in command of his own ship when he discovered

Antarctica early in 1820. Leonid said, “Piccino aventura necessary” (“A little adventure is necessary.”). Giovanni was in high spirits when he returned but, as the storm mounted in fury, he was plainly worried. Leonid and I helped them get their rubber dinghy launched and stayed outside until they were safely on the bark. I had given Giovanni a quarter of our big cheese and my last bottle of *Coca Cola* for Carlo.

The storm continued for two more days, but around 4 PM on 3 January 1971 we loaded the Acker drill and a gas tank in the Zodiac and carried them up to Olav’s glacier anyway. The *San Giuseppe Due* was anchored in Whalers Bay. The following day, we got soaked taking the Zodiac across heavy windswept water to the glacier crater, where we recorded stratigraphy on the ice wall, Olav on the east wall and me on the west wall. Weather was too bad to go out the next day. We got the scores from the bowl football games. Notre Dame beat number-one Texas, 24 to 11, for the national championship, Joe Montana at quarterback. He went on to win four Super Bowls in the National Football League. The sun finally came out on 6 January 1971, so I hauled ten five-foot sections of drill rods up to Olav’s glacier, where he wanted to measure down-hole ice temperatures. The Acker drill runs on a one-cylinder engine that is started by pulling a starter cord. When we finally got it started, Olav went down to get weights to put on the end of his thermocouple wires. I drilled down nine feet before the engine died. Olav returned and we were unable to get it started again. My worst fear was that we would have constant drilling problems, just as I had on Meserve Glacier two years earlier. We went back to the glacier crater the next day, and Olav put me to work measuring strikes and dips of debris layers in the ice, and he measured mass-balance stratigraphy on the north ice wall from crevasse ladders we had lowered over the rim of the crater. When I finished my measurements, and told Olav I was going to the south ice wall to measure stratigraphy, Olav told me he didn’t want me to measure stratigraphy at all because I might “scoop” him in publishing the results. This was paranoid. I reminded him that all my measurements of any kind were entered in his field note books, which would be in his possession at the end of every day. I was interested in studying vertical strain rates that could correct his measurements, and he would have any results of that kind I obtained as well. That seemed to reassure him, so I went to the south ice wall and managed to measure four meters of stratigraphy to Olav’s ten meters on the north ice wall.

When we returned to the Argentine station, the *San Giuseppe Due* was anchored offshore and the Italians were transferring “gas-oil” from 55-gallon barrels there to the bark. I sketched a world map and asked Giovanni to draw the bark’s route from Italy to Deception Island and back on it. When he did, it turned out to resemble Magellan’s circuit of the globe.

I was part of the First International Deception Island Volcanological Expedition with the understanding that I would have ten days to formulate and perhaps begin my own research project. Olav told me that the next day could be one of the ten days, so while he continued to measure mass-balance stratigraphy on the north ice wall of the glacier crater, I hiked up the glacier from the crater to the ice divide on the caldera rim. A thick layer of ash from the 1967 and 1970 eruptions had covered the lower slope of the glacier. Melting snow on the upper slope had eroded an arroyo up to ten meters deep through the ash layer, without seeming to reach ice. From my up-glacier vantage point, I became convinced that the vertical sections on the north and south crater walls that Olav and I were mapping did not lie on the same flowline. Surface strain networks would have to be installed over the entire ash-covered glacier surface in order to measure the vertical strain rates needed to obtain ice accumulation rates from the ice thicknesses between annual dust layers that we were measuring. A major complication would probably be abnormally high strain rates across concentric ring faults that nearly circled the crater, and which were especially numerous on the upslope side.

When I was measuring ice stratigraphy the day before on the south ice wall, I had noticed that steep shear planes had offset annual layers repeatedly, often by substantial amounts. Returning to the ice crater from the caldera rim, I discovered that these offsets were a general feature all around the crater ice walls. They might have been associated with the ring faults, which produced a horst-and-graben

landscape in the frozen ash blanket that covered the upslope surface of the glacier. The debris layers were nearly horizontal, so the shear planes intersected them at angles of close to 90 degrees. Toward the top of the crater, these shear planes increasingly curved away from 90 degrees and toward the crater, like pages of a book can curve about the binding, causing increasing shear offset of the debris layers. This was a strong indication that the glacier was frozen to its bed, as book pages are held rigidly to its binding. I thought that bending of shear planes toward the crater could be a result of the reduced crater diameter toward the crater floor, so that upper ice could flow more easily into the crater than could lower ice. Solving the problem of how these shear bands formed was more interesting to me than measuring vertical strain rates to correct mass-balance studies. This kind of study would also put Olav's anxieties to rest. On the east side of the north ice wall, I found a well-preserved packet of about six shear planes cutting through the same debris layer, with each shear plane displacing the debris layer upward by about ten centimeters. Ice probably recrystallized to produce an easy-glide fabric in the shear planes. This could be confirmed by taking an ice sample back to Ohio State and plotting the ice fabric in and between shear planes using a Rigsby universal stage. Slabs of ice calved into the crater along the ring faults, so understanding how the shear planes formed might reveal an important ice calving mechanism.

Giovanni had spent the day using his bark and dinghy to map the depths of the new submarine craters by sonar. We invited him and his crew for supper when we returned to the Argentine station. He decided to stay until the *Hero* arrived at Deception Island, so he could share his soundings with the *Hero*'s captain and with Bob Dale, the USARP representative at Palmer Station. Bob would be on the *Hero*. The *San Giuseppe Due* displaced 25 tons of water and could make 10 knots under sail. Giovanni was a rich man. He spent fifteen years supervising the family farm, which supported 100 milk cows and 1500 sheep, and grew 300,000 kilos of wheat. His family also owns a factory and God knows what else, and maintains five houses for the various seasons. Giovanni's father was the first general in the Italian air force after World War II, and he flew in American B-36 bombers for NATO. They had six push-propellers, three on each wing, and pairs of jet-engine pods on the wingtips.

On 10 January 1971, we returned to Olav's glacier and succeeded in getting the Acker motor started using a new pull-cord made from part of our clothesline at the Argentine station. Then we managed to drill a hole 50 feet deep to obtain Olav's vertical temperature profile. After we learned what things made the engine stall, we had no more real trouble drilling. We drilled for six hours and we were taking full twelve-foot ice cores by then. I carried the drill rods down to the beach, while Olav brought the Acker motor and the empty fuel can. Leonid stayed at the Argentine station because it was too windy for what he wanted to do. As I was washing dishes after supper, Olav asked me, "How could Leonid spend the whole day here and not sweep out the room, or fill and light the heaters?" I replied, "Communism does not breed ambition."

The *Hero* arrived at Deception Island the next morning after 10 AM. We went aboard and met two biologists, Steve Shabica and Mike Richardson, and a writer from the National Geographic Society, Sam Matthews, and his photographer, Bill Kurtsinger, who had visited us earlier. Olav and I had planned to drill an ice core from the floor of the rift on Mount Pond, where he had measured the mass-balance ice stratigraphy after the 1970 eruption. He had obtained a record going back to 1910 and he hoped he could go back another hundred years with good ice cores. We had to take up the drill motor, the gas can, the aluminum and steel tubes for storing ice cores, and 24 drill rods, 14 from the Argentine station and 10 that we had brought down to the beach from Olav's glacier. In the first trip to the rift, Olav took the Acker motor, Leonid took some of the aluminum tubes, and I carried the 14 drill rods (70 feet), despite the fact that everyone on the *Hero* said I couldn't do it. Olav and Leonid came down before I made it to the rift. They were to bring up the remaining items. Instead, when I came down I found them partying on the *Hero*. That was okay for Leonid, but not Olav, when the drilling was his project. Olav told me we could drill in the morning. That's when I lost it, screaming, "I carried 14 drill rods to the rift because you said

you wanted to drill today! I don't appreciate breaking my ass for your Ph.D. thesis, while you're down here partying!" He started to say something about being sorry I thought I worked too hard, until I screamed, "Shut up! If you say *one more word* I'm pitching your ass into Port Foster!" He shut up and I spent a sleepless night wishing he hadn't, so I would have had the satisfaction of throwing him overboard.

The next morning I told Olav that I would take up the steel core barrels and five more drill rods, so I would have carried 95 of the 120 feet of drill rods to the rift. Olav carried the other five drill rods. Then we had a bitch of a time getting the Acker motor to run, until I saw a milky fluid dripping from the exhaust. After we drained the fluid, the motor then ran fine and we began drilling. Leonid brought Bob Dale, Bill Kurtsinger, and Sam Matthews to the rift to watch, but they weren't there long when the drill rods dropped into a subglacial cavern and encountered clay-like material. Olav judged that to be the basal moraine of the glacier, so we terminated the drilling and carried down half of the drill rods. Bob, Sam, and Leonid brought down the metal tubes containing our ice cores and, hopefully, Olav's mass-balance record for another hundred years. There was a gaping, steaming hole in the bottom of the rift that Leonid called "the Mouth of Hell." Sam liked that, so I supposed it would appear in his article in the *National Geographic* magazine. That evening, the *Piloto Pardo* arrived at Deception Island with Cedomir Marangunic aboard. "Cedo" was a Chilean graduate student at the Institute of Polar Studies.

The next day was lousy, so Olav said it could be one of my ten days to do work of my own. I went to the glacier crater with Mike Richardson to collect some ice samples that contained the vertical shear planes on the south ice wall. When I returned to the Institute, I could use the Rigsby stage to determine the ice fabric. As I was explaining to Mike why this ice was important, a mudslide came roaring down on us and ripped the seat of his pants out when he turned to protect his camera. Then a huge slab of ice calved from the north ice wall, and Mike captured it on film because he was turned in the right direction. Sam Matthews and Bill Kurtsinger were watching Olav measure ice stratigraphy from his crevasse ladder on the north ice wall, so they missed it. Back on the *Hero*, I told Sam how Mike's ass got ripped apart and I suggested as the title for the day in his story, "Raped by a rampaging mudslide on Deception Island."

Olav also gave me the next day, while he returned to the glacier crater to continue recording stratigraphy down the north ice wall from his crevasse ladder. I made the same measurements on the south ice wall, but I also recorded the offset of debris layers by the nearly vertical shear planes. The shear offset had begun right after the crater was formed by the 12 August 1970 eruption, so I could calculate the mean shear strain rate in the shear planes from the measured offset and the total time during which the offset took place. I didn't need a crevasse ladder for my work, because mudslides down the south ice wall had produced several ramps that I could climb to access almost every height on the ice wall. Olav needed me with him the next day to collect ice samples from the north ice wall. Bill wanted shots of Olav on the crevasse ladder, and getting the proper John Wayne pose soon became more important to Olav than ice stratigraphy or ice samples. Olav wanted ice samples that contained ash layers, so he could get a radiocarbon date from the ash that would serve as an independent check on the date he got from counting annual dust layers. I thought only organic carbon gave dates.

Mike went with Olav the next day on a hike over the caldera rim to measure how much snow had accumulated at sites on the glacier where Olav had put bamboo poles the year before. I collected an ice sample containing a superb shear plane from the glacier crater. After lunch on the *Hero*, Olav and I took Bob, the cook, and Lou, his assistant, on a sightseeing tour of the craters produced during the 1970 eruption. Bob was half-owner of a whorehouse in Pusan, Korea, that brought him $800 every month. He had been seeing a whore in Pusan for about eight months when she told him she was saving her money to become a madam. He had won a big poker pot on his ship, so he asked her how much more she needed. When she told him, he reached in his pocket and unrolled the bills. "You've got a partner," he said. She told him, "I will never again sell myself in this way. Any time you want it, it's yours. But never offer me

money again."

Olav and I took Mike up to the rift the next day, where we measured Olav's bamboo poles above the rift for snow accumulation and strain rates. Then we took the remaining drilling equipment from the rift back down to the *Hero*. Wet snow fell all day. While we waited for the Zodiac, we showed Mike the highly deformed ice on the ice wall of Black Glacier. Twisted debris layers gave the ice wall the look of marble or wood. A huge ten-ton chunk of debris that calved from the ice wall was lying on the beach. The debris had red, gray, and brown dirt layers in various shades. As ice in the chunk melted, these dirt layers fell to the ground, reproducing on the beach the same sequence of colored layers.

Bill Kurtsinger accompanied Leonid, Olav, and me to the glacier crater on the following day to get photos for the *National Geographic* article. He got shots of me chopping out an ice sample on the south ice wall, Olav making measurements from the crevasse ladder on the north ice wall, three mudslides that came roaring down chutes just to my right and left, and a big ice slab as it calved from the north crater wall just alongside of the waterfall where surface meltwater from the deep arroyo poured into the crater. Then we all went bathing in the green pool at the bottom of one of the smaller craters near the glacier crater. The water was salty and steam-heated from fumaroles. Our bath was very relaxing, so long as we didn't get too close to one of the underwater steam vents. Bill got pictures of our bath, saying of Leonid, "He is really photogenic!" Leonid was wearing a red-billed hat and his picture was in the *National Geographic* article.

Finally, after several crummy days, we had a bright sunny day on 19 January 1971, our last full day on Deception Island. Olav and I took Sam up to Olav's glacier on Mount Kirkwood for the last measurements of snow accumulation and strain rates around the bamboo poles. The *San Giuseppe Due* was leaving Port Foster for the Antarctic Peninsula, and Sam untied himself from our safety rope so he could watch, while Olav and I went over the caldera rim to install ten more poles. We had almost finished when Olav disappeared into a snow-bridged crevasse. Being the heaviest, I was at the back end of our safety rope. I called to Sam while I braced myself to keep from following Olav into the crevasse. Sam soon appeared over the caldera rim and asked what happened. "'Crevasse,' he grunted" was my reply that Sam recorded in his *National Geographic* article on Deception Island. Olav had dropped about 30 feet and he was somewhat wedged near the bottom of the crevasse, so it took us some 45 minutes to pull him out. Olav planted his last two bamboo poles, and Sam again tied onto our rope between Olav and me. As we were retracing our footsteps to avoid other crevasses, Sam disappeared through a snow bridge into a crevasse. This one was wider and not as deep, but Sam dropped down some 20 feet nonetheless. Sam was a big guy, about 6 feet 4 inches and close to 300 pounds, but we pulled him out. I told him, "Now you can write of crevasse dangers from first-hand experience." And he did. The Zodiac from the *Hero* met us on the beach as the Chilean ship, *Yelcho*, steamed through Neptune's Bellows and headed for Pendulum Cove, the site of the Chilean station that was destroyed by the recent eruptions.

The *Hero* took us to Livingston Island the next day. Leonid, Olav, and I went up on the island ice cap to dig snow pits and plant bamboo poles for mass-balance studies, while Bill photographed elephant seals on the beach. It was getting dark when we came down to wait for the Zodiac. Pairs of bull elephant seals were jousting on the shore. One reared up, mouth agape, and collapsed on the neck of the other, raking it with his teeth. Then the other did the same thing. They fought for hours without a sound, all in slow motion, while the other seals ignored them. In the morning, the *Hero* was back at Deception Island so the biologists could do some diving near the big chinstrap penguin rookery. Then we anchored in Whalers Bay for the night.

On 22 January 1971, the Hero was heading for the Antarctic Peninsula, trolling and taking grab samples from the sea floor for the biologists. They wanted ice fish for Dr. Hemmingsen at Palmer Station. The blood of ice fish has no red corpuscles, so how do they absorb oxygen through their gills? Leonid

was giving an evening lecture on Soviet polar research, and I drew a map of the Arctic so he could show the sites where Russians were working. We anchored in Andersen Harbor, just north of Anvers Island, where Palmer Station is located. In the morning, the biologists did more trolling and grab sampling in waters around the Melchior Islands, getting more ice fish and a twelve-legged sea "spider" called a *Dodecolopoda*. It was one of only about a half dozen that had ever been found. The *Bahia Aguirre* steamed into Andersen Harbor to service the lighthouse that is maintained by Argentina. After we left Deception Island, the *Hero* crewmen got hold of some hard booze. Hans, the German, got plastered and hoisted his true colors. It was the swastika. He railed on and on about the Jews and how they take over everything. How is that possible if Germans are the Master Race?

The *Hero* arrived at Palmer Station on 22 January 1971. It was mainly two buildings perched on a rocky promontory between the sea and the Anvers Island icecap. We approached through Gerlache Strait, a narrow passage with rocky peaks forming granite walls and calving glaciers forming ice cliffs. Twin rounded summits, side by side, were named Una's Tits by members of the British Antarctic Survey in honor of a well-endowed secretary to the governor of the Falkland Islands Dependency in Stanley. A Hawaiian yacht, the *Awahnee* (House of Peace) was anchored at Palmer when we arrived, and we met the captain inside. His name was Robert Griffith, and he was accompanied by his wife, Nancy, and their (almost) l6-year-old son, Reid. They had three Kiwi crewmen who paid them $800 each to be on the trip, John O'Brien, Pat Triston, and Ashley (something). They left New Zealand or Campbell Island and will continue from Palmer to Almirante Brown, the Argentine Islands, Deception Island, the South Sandwich Islands, Herd Island, and Macquarie Island, before returning to New Zealand, more or less duplicating Captain Cook's 1773-1774 voyage around Antarctica. A heart attack had partly paralyzed the right side of Griffith's face, giving him a squint that made him look like a combination of Popeye and Ernest Hemingway, with his white hair and whiskers. He had been yachting around the world ever since his doctor told him to retire after the heart attack. He took us aboard the *Awahnee*. It was quite cozy below deck, with every square foot used. It was single-masted, had a steel hull, and displaced 25 tons of water, as did the *San Giuseppe Due*.

Olav and I were at Palmer Station to re-measure mass-balance poles on the Anvers Island icecap that Ohio State glaciologists, Rudy Honkala and Art Rundle, had emplaced. A helicopter from the Coast Guard icebreaker *Westwind* flew us up to the icecap the next day. Afterward, we skied down to the small British station near "Old" Palmer, about a half mile from "New" Palmer. The three British student-scientists had signed up for two years in Antarctica and had joined us on the icecap. They were Roger O'Donovan, Paul Finnegan, and Miles Mosley. They all had blonde hair, but Roger's was shoulder length and set off with a flat-brimmed Zorro hat he had bought in Uruguay. He looked like Nathaniel Hawthorne. Although he was from Cork in Ireland, his father was in the British foreign service (intelligence), so he had grown up abroad. Roger had been to Nigeria, Timbuktu, Chad, Fort Lamy, and had crossed Afghanistan on horseback from Meshed to Kabul with another fellow, all before age 25. The *San Giuseppe Due* arrived at Palmer while we were up on the icecap, and anchored near the *Awahnee*.

The *Wyandot*, a cargo ship that would take Olav and me to McMurdo Station, arrived the next day and began unloading cargo for Palmer Station. Two VIPs were aboard, Lou Quam, the top honcho in the Division of Polar Programs at NSF, and (ex) Ambassador Daniels, who had helped draft the Antarctic Treaty that opened up Antarctica for international scientific research. Sam Matthews told me that the proper prefix for addressing an ambassador was "The Honorable," so I asked him if the proper prefix for an ex-ambassador was "The Dishonorable." A biologist who will join the *Hero* on its February cruise to the Scotia Arc brought his wife along, and she stole the show. I remarked to Sam that it was amazing how an essentially plain girl could look so pretty after months seeing only men. He said, "Yes. I also discovered that we already have something in common—the same type of camera bag." I replied, "Now you can say to her, 'Did you know that we have something in common—the same type of camera bag?

Let's fuck!'"

At supper, Leonid told us he was entitled to a three-month vacation after he returned to Russia. He said, "It won't be enjoyable. On the Black Sea the beaches are too smooth, the air is too mild, and it is crowded with too many pretty girls. It's not like Antarctica at all." I visited with Giovanni Ajmone-Cat after supper. His crew was going to jump ship when he returned to Ushuaia. "Too much work, too little sleep, plus seasickness," Giovanni told me. "I wish I could take their place," I said. He was happy, having accomplished his goal of demonstrating that his small boat could cross Drake Passage. Giovanni had given Bob Dale his map of the bottoms of the three new submarine craters on Deception Island that were sea-centers blown out during the 1970 eruption. The maps were useful not only because the craters were deep enough to be safe anchorages for small ships, but also for studying how stable their bottoms were after the eruption, especially regarding sedimentation rates.

One-by-one the boats and ships left Palmer the next day, first the *Alpha Helix*, then the *Hero*, then the *San Guiseppe Due*, and shortly after midnight, the *Wyandot*. When the landing barge took us out to the ship, those remaining at Palmer began to hoot and jeer. Two were good ole boys from the South. One yelled, "Go on! Git out of here! And don't come back!" The other one, the cook at Palmer, dropped his pants and mooned us. Olav and I shared a cabin with the medical doctor, Lt. Cmdr. Verne Smith, and the winter-over Navy boss at Palmer, Lt. J. G. Don McLaughlin (called Cap'n Mac). The landing barge pitched up and down in six-foot waves, but the deck of the *Wyandot* was rock-steady. I took a tour of the engine room, which was like a cavern and spanned three decks, with catwalks at each level. The *Wyandot* was 26 years old, it could do l5.5 knots, and its screw propeller was 20 feet in diameter.

We steamed down the Antarctic Peninsula and the next morning we saw Mount Francois, the highest peak on the Antarctic Peninsula and a most impressive sight. Many places in Antarctica go on "Zulu time" and the *Wyandot* crossed the Antarctic Circle at 6:30 AM Zulu time on the morning after that. Verne had just finished reading a book by Theodore Roszak called *The Making of a Counter Culture*. It included a British National Health Service study that recommended creating a Ministry of Well-Being to separate "normal" from "abnormal" (unhealthy or ineffectual) people, killing "unproductive" old and senile people, enforce contraception on adolescents, and specify the number of children a couple can have, based on their genetic worth. That was 40 years ago and here we are, beginning to make it happen in the USA, with "Obamacare" and its Death Panels.

At 30 minutes past midnight on the last day of January, we passed Peter I Island. The *Wyandot* skirted the edge of the pack ice, so it made a zigzagging course on the way to McMurdo. I passed the days getting to know the officers and crew. We covered many subjects, all recorded in my diary, but one that never seems to change is race relations. On 3 February 1971, I got in on a discussion that started with Verne, the ship's doctor. After the JFK assassination, the Secret Service and the FBI had come under criticism for lax security in Dallas during Kennedy's visit. That subject came up during an interview with FBI Director, J. Edgar Hoover, reported in *Time* magazine (14 December 1970, page 16). One criticism was that security should be reinforced when a US president is making appearances close to the Mexican border. Hoover's position was, "You never have to bother about a president being shot by Puerto Ricans or Mexicans. They don't shoot very straight. But if they come at you with a knife, beware." I asked Verne if he ever treated anyone who had been sliced up by a black man using a straight-edge razor, which whites thought every black man carried. He said he had. Then he said, "One night a nigger came in holding his belly and said, 'I've been swizzled.' The wound was only an inch wide, but the one who knifed him had shoved in an eight-inch stiletto up to the hilt and then whipped the blade around before pulling it out. All the arteries and intestines were sliced and he died on the table." I added the account by Gene Lautenschlager, my fellow graduate student at Northwestern University. He was standing at a bus stop in a black section of Chicago when the front door burst open in the tenement across the street and a black man came running out, heading right toward the bus stop. A black woman with a revolver appeared in the

doorway and screamed, “Outrun this you black bastard!” ***Blam! Blam! Blam! Blam!*** The man dropped dead at Gene’s feet, full of bullet holes. Gene also told me that a member of the German American Singing Society in Chicago had stomped a black man to death who tried to rob him on his own doorstep. I also recalled the Military Policeman who shot a Negro who came at him with a knife. “I’m dying,” the black man said, staggering back and clutching his belly. “You’re fucking ‘A’ you’re dying!” shouted the MP. ***Blam! Blam! Blam! Blam!***

We crossed the International Date Line on 7 February 1971, so we skipped a day. I asked the captain if he had ever brought the *Wyandot* to McMurdo following the barrier of the Ross Ice Shelf west, instead of going south along the Transantarctic Mountains as we were doing. He said he had in the olden days when he could use his personal knowledge of sea-ice conditions, but now satellite images show the sea-ice extent and he is obliged to chart his course using that information. If he took the shorter route and got stuck, an icebreaker had to come to get him free and he would have a lot of explaining to do. Except for that, he would prefer to use the experience from his seven previous trips on the Palmer to McMurdo run. The next day, Olav and I tested the CRREL inclinometer we will use to measure the tilt in the three boreholes I had drilled through Meserve Glacier during the 1968-1969 Antarctic summer. We also tested a Sperry-Sun commercial inclinometer that measured higher tilts, in case ice flow had bent the boreholes more than I anticipated. We passed near Franklin Island in the Ross Sea after supper and by 9 PM we were approaching Ross Island, with Mount Erebus looming into the clouds while a fading sun sent rays through gashes in a ragged sky.

The sound of unloading woke me at 5:30 AM the next morning. The *Wyandot* was tied up at McMurdo, so I went ashore for a look. McMurdo had grown, but not so much that I couldn’t find my way around. The USARPs had new living quarters complete with sauna bath, and the USARP field processing center was housed in two new buildings on the hillside below Nukey-Poo, the nuclear power station that had been shut down. Olav went to Scott Base, the Kiwi station on Ross Island, to phone his wife, Billie, who was waiting for him in New Zealand. I had a powwow with Commander Jim Brandau of the Navy helicopter squadron, to find out how soon we could be flown to Meserve Glacier. Brandau was eager to close down the squadron for the winter, so he offered to drop us on the glacier surface and wait for us while we measured inclinations down the three boreholes. He would even provide two Navy people to help us. We were cleared to be flown out the next morning, so I spent the day charging the batteries that would power our inclinometers and making sure that both inclinometers worked. Then I started reading the pile of mail waiting for me.

The helicopters took Olav and me to Meserve Glacier after 8 AM, and landed us inside the circle of painted stones that was the helicopter “landing pad” where I had identified the Bull-Nye Syndrome two years earlier. We entered the Jamesway that Gerry Holdsworth called Cliffside Camp and brought in our camping gear and turned on the heating stove. The wooden ladder I had built for climbing the ice cliff was down and cracked, but we didn’t need it. Jim Brandau took us up onto the glacier with the two Navy “volunteers,” Dave O’Connell and Fred Hartlin. He dropped Olav and Dave at borehole G5 with the Sperry-Sun single-shot inclinometer and dropped me and Fred at borehole G3 with the CRREL multiple-shot inclinometer, and then flew to Vanda Station to drop off two Kiwis who were also in our helicopter. I had capped all three boreholes with pipes that stood above the glacier surface, so meltwater couldn’t get in, but the G3 borehole had been drilled in a shallow pit that was filled with frozen meltwater over the top of the pipe. When Brandau returned, I had him fly Fred and me down to the G4 borehole, where we logged inclinations down the hole with no problems. Olav and Dave came up saying they had logged G5, so Brandau flew us down to the Jamesway where we had a drill that could open the G3 borehole. Then he flew us back up onto the glacier, where Fred and I logged the G5 borehole with the CRREL inclinometer, for comparison with results using the Sperry-Sun inclinometer, while Dave and Olav drilled out the top of the G3 borehole.

It was getting windy and Brandau couldn't hold his helicopter on the glacier surface, so he flew us all to Vanda Station. We developed the CRREL inclinometer film in the Vanda darkroom, and found that the pendulum was within the bullseye target except for the last 5 or 6 shots down the G4 and G5 boreholes, so those depths would have to be re-logged using the Sperry-Sun inclinometer, which measures high-angle tilts. Olav said the G3 borehole was full of ice. I borrowed an ice drill from the Kiwis and, when the wind died down, Brandau flew us back to Meserve Glacier. Olav and Dave re-logged the bottom part of the G4 borehole with the Sperry-Sun inclinometer, while Fred and I tried to open the G3 borehole with the Kiwi ice drill. We succeeded, but the drill wasn't wide enough for either inclinometer to pass through. Brandau took Olav and me to Scott Base, along with two Kiwis who were in the field. In going to pick them up, we got treated to a flying tour of the Dry Valleys landscape of soaring buttes and mesas towering above the mile-deep floor of Wright Valley. We decided that the G3 borehole couldn't be opened further with the equipment available to us. Brandau flew us back to Meserve Glacier the next day, so we could get new measurements of mass-balance and surface strain rates on the network of stakes that Mauri McSaveney had put on Meserve Glacier two years earlier. Then he flew us down to the Jamesway, we closed it up, loaded our equipment on the helicopter, and returned to Scott Base. Olav phoned his wife and I walked back to McMurdo, which was about two miles away. I went to the USARP chalet and told Chris Shepherd, the USARP representative, that we had finished our work.

Olav and I had made a good team. I helped him with his doctoral research on Deception Island and he helped me finish Gerry Holdsworth's drilling project on Meserve Glacier. Olav went on to become director of the *Norsk Polarinstitutt* in Tromso, Norway.

That night the USARPs held a party at which Chris was awarded a plastic erection. He grabbed it with gusto and I said they should have smeared it with peanut butter first. I got to talking with Bob Buettner, boss of Holmes and Narver, a company that had big maintenance and construction contracts in Micronesia, and had been awarded a similar contract for McMurdo. He told about a Jesuit priest who had built several schools on the South Pacific islands, using only his students (none older than l4) as workers, and who had also organized and instructed a student band that traveled thousands of miles on catamarans with outriggers to perform for tourists on the various islands. They played Micronesian music and raised money to send his students to college. He sent six of his brightest students to colleges in the States, and he attended all of their graduations. I asked Buettner if any of them had married Americans, instead of returning to help the other Micronesians. He said, "No. Micronesians are short, dark, and squat, and are not attractive like the tall, lighter, handsome, and husky Polynesians." He said Melanesians are often very tall and darker still—downright black, and the ones on New Guinea were the most primitive of all. "They eat grubs by the handful out of dead trees, and their pig roasts aren't really roasts. They just burn the bristles off." He said the Aussies who work on New Guinea want to keep them in their "natural state."

The next day I went to the photo lab at McMurdo and developed the film from the inclinometers. The CRREL film was excellent and the Sperry-Sun film was good enough. The photographer and I made two sets of enlarged prints from both inclinometers in which the inclination and direction could be determined to 0.1 degree for both the G4 and G5 boreholes. The next day we packed our equipment for shipment out on the *Wyandot*. Olav flew to New Zealand to be with Billie sooner, but I took the *Wyandot* so that my whole Antarctic trip would be by ship. I bought gifts for brother Leo and his family at the McMurdo store because they wrote letters to me. An Irish priest, Father Creagh, arrived from New Zealand that evening. The next day was Sunday, 14 February 1971, Saint Valentine's Day. I went to confession and at the 10 AM Mass I offered up my Communion for Florence Hughes, wife of my Godfather, Felan, and Frankie Gates, brother of Leo's wife, Naomi. Paw had written that both had died while I was in Antarctica. Then I wrote letters to Paw, Leo, Tim, Fathers Trelease and McGuire at Ohio State, and some of my girl friends there. Only Sally Seabert and Pat O'Neill had written me.

I turned 33 on 15 February 1971, and that was the day when the *Wyandot* left McMurdo. Pat

Haggerty at the USARP chalet told me I should board at noon. We steamed past Turtle Rock and Erebus Ice Tongue, which is the floating terminus of an ice stream that begins high on the slopes of Mount Erebus. Just north of the ice tongue, we met the *Lindblad Explorer*, a tourist ship bringing the idle rich to McMurdo. It belonged to Lars-Eric Lindblad, who pioneered tourism to Antarctica. In years ahead, I was to be a guest lecturer on many Antarctic cruises of that very ship. All the next day, the Transantarctic Mountains lay off the port (left) side of the *Wyandot*. A blue, sunny sky set off the lofty, snowy peaks to grand advantage. Toward evening, we reached the northern limits of the mountains and of the continent, and they receded into the horizon behind us. As the sun hung on the western horizon and the moon rose in the east, stars appeared in the heavens for the first time in months for all of us. The long Antarctic day had come to an end.

The *Wyandot* crossed the Antarctic Circle just before noon on the next day, and entered heavy seas later in the day. By late evening, waves were 8 on the Beaufort wind scale (gale-force winds between 39 and 46 knots and spindrift on the waves). A windless calm is zero and a hurricane is l2. The cargo-free *Wyandot* pitched (fore and aft rocking) and rolled (port to starboard rocking) all night and on into the next day. After it crossed the Antarctic Convergence, the sea was warmer and free of ice, and the winds and currents were with us. The South Island of New Zealand was slipping by when I awoke on the morning of 21 February 1971, and we steamed into Lyttelton, the harbor of Chi Chi (Christchurch), around 8 AM. Harry Simmons, the Holmes and Narver chief, met us with his concubine and took us to US Navy barracks in its Operation Deep Freeze section of the airport. The Moscow Circus was in town, so there were no commercial accommodations. A letter from the Vega Travel Agency contained my Soviet visa and travel vouchers for using the Trans-Siberian Railroad on the return to Ohio. Herbert Leitner, an arrogant Austrian hitchhiker who accompanied me through parts of Laos and Cambodia on my previous return from Antarctica, had worked with Australians in New Guinea and his stories about the native headhunters had instilled in me a determination to see the place for myself. The fact that New Guinea cannibals had eaten the son of Nelson Rockefeller only whetted my appetite to meet them. I planned to go to New Guinea from Australia and then continue on to Nakhodka, the Pacific railhead for the Trans-Siberian Railroad.

The next morning I intercepted a letter Paw had sent to McMurdo after reading my letter describing Robert Griffith's yachting to Antarctica on the *Awahnee* after his heart attack. Griffith's inspiration, and the fact that the "good sisters" at Maryhouse in Pierre, South Dakota, had taken down Paw's family pictures, had made Paw determined to move out of that Catholic nursing home and try living on his own. I went into downtown Chi Chi and bought a ticket reading Christchurch, Melbourne, Cairns, Port Moresby, and Hong Kong, and with that I was able to get a visa to enter Australia. A "ticket out" is a requirement Australia imposes before issuing visas, in the hope it will screen out riffraff with no money. That's a laugh, because Australia's first settlers were officially riffraff, British convicts and Irish rebels. With some satisfaction I went to see *Ryan's Daughter*, a movie about an Irish woman who seduces a British officer in the occupation army garrisoned in western Ireland. I flew to Melbourne the next morning and arrived in Melbourne in the early afternoon. I bought a bus ticket to Cairns, preferring to see the country on ground rather than flying over it by air. I loved Melbourne. The main drag was Rourke Street, which began at Saint Patrick's Cathedral, a magnificent Catholic church that dominated the city from a hilltop. A statue of Daniel O'Connell beside the main entrance testified to the spirit of the Irish exiles who built it. Classic Greek architecture identified the Government buildings, the live theater was ornate, and old buildings in nineteenth-century styles lined the street. Melbourne had a settled charm that was unique in Australia.

My bus left Melbourne that evening and by morning it was winding through rolling hills green with woodlands and pastures. The bus stopped for 45 minutes at Canberra, the Australian capital. It was pleasant enough, what I saw of it, but it lacked the dynamism and vitality of Melbourne. The bus arrived

in Sydney at noon and I looked into the possibility of transiting through West Irian, the Indonesian half of New Guinea. I got conflicting information and missed the 2:30 PM bus that took the inland route to Cairns, so I boarded the 3 PM bus that followed the coastal route. Nearly the entire Catholic population of Australia was Irish, so a Catholic religious shop had a lot of Irish books. I bought two to read on the bus. As it crossed the bridge over Sydney harbor, I saw that the Sydney opera house was still unfinished two years after my first visit. The original $5 million construction estimate had ballooned to $100 million.

Great waves were rolling into Surfers Paradise when the bus passed through the next morning, but I saw only one hardy surfer. A family of eight from Oakes, North Dakota boarded the bus in Brisbane. They had just immigrated to Australia. We drove through nearly virgin country, heavily wooded mountains like Appalachia, and sugar cane on the flatlands between the mountains and the sea. A series of eroded volcanoes exposed their basaltic cores as a group of rocky pillars called Glasshouse Mountains. The road was very rough, and one of the girls in the American family got sick. The bus passed through Gympie and arrived at Bundaberg, Dave and Margo Severud's new home on the flatlands. It was tidy, with a pleasant main drag dominated by a church and park. I said to Margo, "Anytime you have regrets, just remember those Dakota winters." I noticed signs advertising houses for sale, ranging in price from $5000 for wood to $l4,000 for brick. After Bundaberg, the mountains came right down to the sea, and the next sizable towns were McKay and Townsville. A bunch of McKay girls kept everyone on the bus awake all night with their giggling and carrying on. We passed an impressive waterfall the next afternoon in heavily forested and rugged country that was almost void of settlement. The bus arrived in Cairns around 6 PM, and I checked into a second-class hotel with a $2.50 room. It had been three days of bumpy bus travel.

At 8 AM the next morning, I paid $l.50 for a boat trip out to Green Island on the Great Barrier Reef. It had a theater, an aquarium, and a nautical observatory, all showing the wonders on the Great Barrier Reef. There were plenty of cabins and shops for tourists, and paved pathways led through lush tropical vegetation. Everything was 50 cents and I saw it all. The glass-bottom boat trip over the reef was best. It was a view of another world. Two Texans were on the boat, and one said of the most dramatic corals, "They look like antlers." His friend replied, "I think they are called stag-horn coral." They looked phosphorescent in brilliant blue. Other corals were colors I had never seen, and we passed over a brain coral that was 20 feet across. The shapes, colors, sizes, and structures of coral were endless, and looked like an undersea jungle only one to ten feet below our boat. Delicate lacey corals contrasted with massive tumorous shapes. Fish of unbelievable colors, patterns, and shapes glided in and out among the living geography of the reef. Grass-like streamers waved to and fro with the ceaseless rhythm of the sea. It all was beyond description.

The place was crawling with Japanese tourists. I got to talking with two Aussie boys who told me that Japanese were being smuggled illegally into Australia from the York Peninsula. I said that wouldn't happen if white Australians were willing to do the stoop labor, and I told about the Yugoslavs imported into Western Australia to work in the mines, because native Australians wouldn't do that kind of work. I said the same thing happened in America. Some 40 million immigrants came in to do the work that native Americans wouldn't do. I said, "Australia needs two things, capital and people." They replied, "Oh no, we have all the people we want." I said, "Then your resources will never be developed, because the present population refuses to do the hard work that will take."

Back in Cairns, I located the Catholic church and went to Confession. The priest told me to "contemplate the real presence of Christ in the Blessed Sacrament" for my penance. I knelt before the Blessed Sacrament and prayed, "Lord, when you lived among us you lamented, 'The birds of the air have their nests and the fox has its den, but the Son of Man has nowhere to lay His head.' Let my heart be your pillow and my body be your dwelling place. Give me strength so that no deed or thought of mine will dirty my house and drive you from it. Never let the lonely byways and hedges be more pleasant than my

soul." How I wish that were true today. I attended the 9 AM Sunday Mass the next day. The church was the Saint Mourcas War Memorial Cathedral, and Cairns also had a Catholic high school, college, and convent. The Bishop of Cairns was busy indeed. Cairns was at the end of a bay surrounded by fully wooded mountains that tumbled in primeval beauty into the sea. It should become a major tourist Mecca of the world.

My plane to Port Moresby left Cairns the next afternoon. Two white girls in "hot pants" were at the airport, and one was really painted up. The flight to Port Moresby provided a spectacular aerial view of the Great Barrier Reef. Port Moresby was the administrative capital for the Australian half of New Guinea. A divided highway led into the city from the airport, with expensive houses marching up the hillsides along the way. I booked at the Moresby Hotel ($6 for bed and breakfast), sharing my room with a Scottish Pict named Duncan who had worked for a contractor in Vietnam. He said, "Vietnamese men really hate the Americans because they are big, strong, hairy-chested, swagger, have money, and get the Vietnamese girls. The girls are very well-developed, pretty, and relatively tall and robust compared to the men, who are scrawny and effeminate." He said the most beautiful girls and the most muscular and tall men are Eurasians of French-Vietnamese mixture from the days of the French Foreign Legion. He said these half-breeds are despised as individuals but the children can be sold for a good price because the boys make strong workers and the girls make attractive whores. He didn't know how the Vietnam War would end, but he said North Vietnamese were no-nonsense, responsible people, whereas South Vietnamese were a happy-go-lucky, devil-may-care bunch. I have heard that view contrasting people in the north and south of countries all over the world. It exists in America, Ireland, Germany, Italy, China, everywhere.

I wanted to take a boat down the Sepik River on the north side of the Bismarck Range, as that is where the headhunters and cannibals were located, according to my sources. I made enquires in Port Moresby the next morning, and got letters of introduction to Father Reuter, Director of Catholic Missions in the Sepik District, and Bruce Lawes, owner of Sepik Air Safaris, both in Wewak on the north coast. I flew to Wewak, with landings at Goroka and Madang. While flying over the mountains, I noticed that village huts in jungle clearings on hogbacks were round with conical roofs, whereas village huts in the lowlands were square with sloping, pointed roofs. Father Reuter wasn't in Wewak, but Bruce Lawes was. He took me to a motel where he had his office. He had been in New Guinea since 1947 and on the Sepik River since 1953. He had been up all its tributaries by canoe, and was the first white man to see many of the villages. Most villagers didn't know much beyond their own village, but there was always someone who had gone as far as the next village to act as his guide. If he went straightaway to the next village, it would be deserted but he knew the natives were watching him from "the bush," as the jungle was called. If he waited a few months, his "guide" would go there to reassure them, so he would be warmly greeted when he arrived. He announced his coming on the slit drum, a hollowed-out log with one slit running lengthwise. The drum could be heard 10 or 20 miles away.

Bruce spoke Pidgin with his native employees. The motel had a collection of regimental plaques, including one from the Australian Special Air Service Regiment that fought in Vietnam. They were superb jungle fighters and ruthless killers, having killed 900 Viet Cong the year before without casualties, but the native Papua-New Guinea Volunteer Regiment wiped them out in mock guerrilla warfare during joint training exercises. Wewak was the site of the last Japanese battle in World War II, and took place after Hiroshima. In the battle of Wewak, 6000 Aussies wiped out 55,000 Japs. Some Japs escaped into the jungle, where they ate or were eaten by the natives. Many war relics were still lying about.

Bruce arranged for me to join five travel agents from Brisbane on a Sepik Air Charter flight to Angoram, a small village on the lower Sepik River. The pilot of our Cessna was a Protestant missionary who has flocks all over the Sepik District. Angoram was on a patch of slightly elevated ground on an otherwise endless swampy plain. It had a hotel in the native manner and a new modern hotel was under

construction. The main attraction was the House Tambaran, or "spirit house." It was about 100 feet long, with open sides around the ground-level floor, an enclosed upper floor, and a steep-sided swaybacked roof that was supported by large poles and was woven from wooden strips. Inside were masks, statues, and crocodiles, all hand-carved, and hand-woven costumes that fit over the entire body and had grotesque heads. A processing house by the river sold green crocodile skins. Crocodile "figureheads" adorned the bow of every canoe. Canoes were long, hollowed-out logs. Our tour included a $4 boat trip to Kambaramba, farther up the Sepik. On the way, we stopped at a village where I met an old mission "boy" named Augustine, who was 50 or 60 years old. He had named a son "Terry." Augustine spoke English as well as Pidgin, which was a conglomerate of native, English, and German words in a sentence structure having English and German similarities. Western New Guinea had been part of Germany's colonial empire through World War I, and was then annexed to the British Empire. Augustine showed me the church, which may have once (still?) been a House Tambaran, but inside were rows of low wooden boards that could be used for both sitting and kneeling, and that faced a table-desk that could serve as an altar.

The village of Kambaramba was built on stilts on the shores of an oxbow lake that was once a bend in the river. All along the riverbank people were engaged in carving canoes from big logs. A corpse lay alone in one small house on the riverbank. Our riverboat was merely two canoes, across which a wooden platform with a top had been built. The native boatmen were four boys and two drivers, one beside the outboard motor at the back end of each canoe. I passed out chocolate balls to the boys and they gave us a "sing-sing" of native songs, one of which had a very catchy chant that I thought could be marketed. They took us back to Angoram and we had a $2 dinner at the native hotel (no grubs scooped out of rotting trees were served). Then we flew back to Wewak.

An hour after returning to Wewak, I took a Sepik Air Charter cargo flight to Ambunti, a village on the middle Sepik River (I paid Bruce $57 for both flights). Ambunti occupied a hollow in Mount Ambunti that was carved out by the Sepik River. The location was on the edge of the mountainous upper Sepik River and was very picturesque. The House Tambaran had been converted from a spirit house into a council house where villagers decided community affairs. A double row of carved wooden statues led to the entrance. It looked much like the House Tambaran in Angoram, but had only a ground floor. Waiting for us when our plane landed was a slight young man who was stark naked but for short shorts that clung to his hips at crotch level. He was a hollow-eyed, wild-eyed, yellow-haired scarecrow who looked like he had gone daft from jungle fever. Such was not the case. His name was Warren Hanson and he was the postmaster, but more important to me, he owned Las Kompani Pty. Ltd., which conducted river tours. His competitor was another Ambunti outfit run by two tall, dark, husky brothers who looked alike enough to be twins. Warren told me he had a trip downriver to Angoram for $70. He also had two jet boats that were both upriver, took 13 passengers plus luggage, were covered, had high-backed cushioned seats, a public address system, two-way radios, and a tape recorder with earphones so tourists could listen to music on the river. They rented for $130 per day, including native crewmen. He or his native boys would take people anywhere on the Sepik and its tributaries that is navigable. He fed me and put me up for the night at no charge.

At breakfast the next morning, Warren told me that for $54 with fuel, one of his boys would take me downriver to Angoram that day, then on to a Catholic mission called Marianberg the next day, and back to Angoram the same day. Stops on the way would include Kanganaman, which had the largest House Tambaran on the river that also still functioned as a spirit house (with 50 cents admission for tourists). That was two days at $20 per day and $14 for fuel, an offer I couldn't refuse. My boat was a two-seated blunt-end aluminum craft powered by a 20 horsepower outboard motor operated by Matthew, a young native boatman. We left at 9 AM and passed through hilly country until we reached Pague, where the road from Wewak ended and the flat marshlands began. An occasional volcanic cone rising from the

swamp provided the only relief on this vast morass that extended all the way to the Bismarck Sea. Swarms of mosquitoes were everywhere, but on the river we moved fast enough to avoid them.

Our next stop was Kanganaman, which Matthew reached by taking a narrow stream that flowed into the Sepik from the north. We tied up at a bridge across the stream just as a roof-topped boat arrived, with one of the brothers from the rival touring company at the steering wheel, and an elderly Jewish couple from New York sitting in straight-backed chairs. We followed a path alongside the stream through tall trees to the village. Yogi Berra had said, "If you come to a fork in the road, take it." We took a fork in the path that led to the House Tambaran. It was two floors high and much larger than the one at Angoram, but the upper floor was not enclosed. The ground floor had bed-like platforms hanging from the ceiling, and a great variety of native artifacts were lined up under other platforms that were supported by poles and ran the full length on both sides of the House Tambaran. The artifacts included several large slit drums of various designs. I climbed the ladder to the second floor, which was largely barren except for some large decorated clay basins. The ground floor seemed to be a market for tourists, but the upper floor was more private and may have been used for the pagan spirit rites and ceremonies. Its floor was made of bamboo-like reeds that couldn't support too much weight.

I took the other fork in the path that led into the village. A huge coconut fell from a high tree and landed only a few feet away. I passed two dogs copulating and saw a new house going up on the riverbank. Houses were usually on posts, with fishing baskets (traps?) hanging from under the floors. House walls were of reeds woven in decorative patterns, and roofs were made from a tough kind of grass, probably marsh grass. As I admired a tall wooden statue and a mask in front of his ground-level house, the artist came out and posed next to his work for a photo. The mosquitoes didn't bother the virtually naked black-skinned natives, but mosquitoes swarmed around me. A clutch of hollow-log canoes were tied up together in a wide part of the stream that served as the local yacht club. The other tourist boat was gone when Matthew and I returned to our boat.

We continued on downriver to Tanbanum, our next stop. It stretched along the riverbank for about a mile, and it had a Catholic church and school, attended by a German nun named Sister Mertia. She had previously spent 20 years in China and had been in New Guinea for 18 years. A monsoon storm had damaged the roof of a ramshackle wood and grass church beyond what the native schoolboys could repair. A painting of Jesus was on the wall behind the altar inside. A new church and school were being built across the river. Sister Mertia was flabbergasted when I gave her $20 to help out, and told me that many tourists stopped but none gave a penny. She disappeared and returned with a crocodile carved from wood and some nuts with faces carved in them as gifts to me. Matthew was a Catholic and Sister Mertia visited with him in Pidgin. The school was like other buildings, but bigger, and had rows of wooden boards about six inches off the ground like the "church" I had seen the day before. Pictures of scenes from the Bible hung around the walls. Although she was a veteran missionary, being near her all I could think of was Jesus saying, "You must become as little children before you can enter the Kingdom of Heaven." The artist who carved the crocodile appeared for a photo with me and his carving, I bought two masks for my brothers ($3 and $1), and watched people carving everything from canoes to shields. We left at 5 PM and continued on to Angoram.

Ripples in the water located submerged logs or shallow spots, but ripples were hard to see as daylight faded. Matthew took shortcuts to avoid some of the big loops in the meandering river. These bends tripled the 100 miles from Ambunti to Angoram as the crow flies. Rain clouds appeared to the south and by 7 PM a beautiful area of blue and white streaks on the western horizon provided our only light. A half hour later we glimpsed the lights of Angoram. It was nearby but several bends beyond by river, so it took another half hour to get there. Matthew took me to a screened-in house on poles owned by Warren Hansen, where I spent the night. Upstairs, a husky Maori wearing only a red bikini read the Port Moresby paper and slurped chicken soup. A thin young Aussie was sleeping naked in an adjoining room,

and a native fixed me a low bed in the remaining room. The Maori, whom I took to be the house manager, came into my room and sprayed mosquito repellant after I was in bed. Thus protected, I stripped naked for a more comfortable sleep in the muggy heat.

I awoke the next morning to news over the portable radio in the next room about a meeting of educated Papua and New Guinea natives to plan their future independence. The new state would be New Gini. The new flag was designed by a Papuan girl and displayed the Southern Cross and the Bird of Paradise. A native boy joined Matthew and me in our trip downriver to Marianberg, 40 miles away by boat. We passed only one village on the way. It had an Australian-style church built on the only hill. Marianberg was a Catholic mission village. It had a large sawmill spread over several acres, complete with a narrow gauge railway for hauling logs. A Filipino ran the mill for the mission sisters. Native children were playing at a hut near the mill, and I asked their father how many children ("pickaninnies" in Pidgin) he had. "Eight, three Marys and five boys," he replied. He took me to a nearby hilltop crowned by a rather large wooden building ("single boys' house") and the church ("Jesus' house"). The church was painted blue and was roomy, with doors on three walls. Inside, a large painting of Christ and His Father crowning Mary, Queen of Heaven, hung on the wall behind the altar. The "single boys' house" was where the priests lived. It was large, airy, screened, and "God bless you" was painted above the entrance to a hallway that ran the full length of the house and out the other side, with no doors at either end.

A pretty young nun was visiting with children under a nearby tree, and I introduced myself. Her parents disapproved of her vocation, and when she returned to Australia for a visit they said, "Oh, New Guinea has shriveled you all up!" I told her she looked quite unshriveled to me, and indeed she did. She was quite lonely at first, but now she loved her assignment and described for me how she could tell what part of New Guinea a native was from just by looking at his physical features. Her name was Sister Gregory, and I said, "When are religious orders going to stop giving nuns masculine names? At a family reunion in South Dakota, my uncle Lawrence introduced a shirttail relative as Sister Circumcisiatta." Sister Gregory told me she didn't dare tell her parents her worst experiences. I said, "After they get resigned to your vocation, they will want to hear only the most hair-raising stories." We were joined by an older Dutch nun who knew Sister Mertia in Tanoanum. I mentioned the vicious mosquitoes there, and asked why Marianberg had so few. "We bless them," she replied. I said, "I wonder why Sister Mertia never thought of that."

Matthew followed the riverbank on the way back to Angoram, looking for crocodiles in the reeds. We saw one, but it was gone in a flash. There probably weren't many on the main river because they are hunted for their skins. At Angoram, I boarded a plane to Mount Hagan, one of the highest peaks in the Bismarck Range. A Swiss couple named Eigenmann was aboard. The pilot was named Schuschnigg. He was related to the Austrian Chancellor who was kicked out by the Nazis after Anschluss. He flew us over several lakes that were covered with lily pads. I mentioned that they must be a breeding area for mosquitoes, and should be named the Mosquito Lakes. We stopped at Ambunti to pick up the New York couple and the collection of artifacts they had bought. They were going to Medang and on the way we flew over an active volcano on an island in the Bismarck Sea. The pilot circled the crater and then flew right over it so we could look down into it and see the smoke belching out. From Medang, he flew up over the Bismarck Range to Mount Hagan. It was a spectacular flight. A fading late-afternoon sun illuminated the billowing clouds and rain showers swept across the jungle below, as great dark peaks soared higher than our plane, which flew between 9000 and 12,000 feet.

The village of Mount Hagan was nestled in a broad mountain valley surrounded by Mount Hagan and other peaks. The mild highland climate was a relief after the steaming jungles and swamps along the coast. I spent the night at the Kinimanga Hostel ($4 for bed and breakfast, $6 for full board). At breakfast, I met Carl Clausen, who remembered me from our Northwestern days when we both took courses in the Materials Science Department, he as an undergraduate student and me as a graduate student. Small world.

I went to the native market and ran back for my camera when I saw how the natives were dressed. Native women were practically naked, wearing only a string around their hips from which a few cords dangled in front. Most were potbellied and had long pendulous breasts that hung nearly to their navels. One woman wore an old burned-out fuel can as a hat. The men were often quite good physical specimens. They wore a very wide belt with a cloth hanging in front and reeds hanging in back. Some men wore fancy feathered headdresses. They all stood still with folded arms and looked fierce. A few had black umbrellas in the crook of their elbows and, with their frowning faces, it was a hilarious sight. The Eigenmanns were going to a Sing Sing in a nearby village the next day, and they invited me to join them.

The next day was Sunday. I located the Catholic church but the Mass times were after I left for the Sing Sing. I pleaded "vacation privileges" and boarded the TAL Airline bus that was to take several of us to the Sing Sing. We stopped at an old bird sanctuary near Banz, about 50 miles from Mount Hagan. The driver was our pilot. He took us through beautiful mountain country, stopping at a resort to get the clutch fixed. The gravel road became dirt, narrowed, and ended in a mud hole. We hiked a mile to a mission church, where we could see the natives gathering for the Sing Sing on the next ridge. As they say in the Army, "There's always one more ridge." We hiked over five ridges in a light rain on a road that became an up-and-down path that crossed two creeks in deep gullies. Eventually we spotted the dancers all decked out in Bird of Paradise feathered headdresses. The chief walked toward us with his palm up and said, "Stop!" We had to negotiate a price before he let us continue. The Sing Sing began when the rain stopped. About 40 men danced around a large tree in the center of the clearing, while the other natives looked on. Four men, including the chief, led the dancers. They formed a line in front and carried spears. The other dancers had long cylindrical drums. The four leaders would march forward chanting, while the others followed. Then they would turn abruptly and dance back toward the others, pointing their spears in the air. The others then also reversed motion, and retreated while pounding their drums. This procedure was repeated again and again until it produced an almost hypnotic effect on both dancers and observers. Then our pilot joined them and broke the spell when everyone laughed.

The Sing Sing stopped abruptly when rain resumed falling. The dancers then posed for pictures and palmed coins as tips. One dancer and one teenage boy among the onlookers were blond, with copper skins. Our pilot said it was natural. He called them albinos, but they had brown eyes. For all their fierceness and bones through their noses, the dancers were quite sophisticated. One had sunglasses hanging on his arm band. A Christian cemetery with many crosses was nearby. The dancers were Christians!

After 10 AM the next morning, an ANSETT bus picked me up at the hostel in Mount Hagan and took me to the airport. There I learned that our pilot, Captain Schuschnigg, was recognized as the best pilot in New Guinea, and flying in New Guinea was about the most dangerous in the world because of the tricky winds in the mountains, the rugged landscape, and the dense jungles. Many airplanes were lost, and there was little chance of rescuing survivors. I always seemed to be running into a Scot in New Guinea, Duncan in Port Moresby, Gordon McKenzie in Wewak, Jock McKinnon in Ambunti, and Eoin in Angoram. ANSETT was the Australian travel conglomerate and it had purchased Papuan Airlines, which flew our DC 3 from Mount Hagan to Port Moresby. I took a six-hour QANTAS flight from Port Moresby to Hong King. Why QANTAS had stewards instead of stewardesses was beyond me. I spent the night at the YMCA in Hong Kong.

The next morning I took the ferry to Hong Kong Island (Victoria), where the Far Eastern Steamship Company took people to Nakhodka, the Pacific railhead of the Trans-Siberian Railroad. My ship, the *Priamurie*, departed in four days, on 13 March 1971, so I had plenty of time for shopping and sightseeing. Communist Chinese propaganda was plastered everywhere. In one Red magazine, I read how a scientist was able to preserve tomatoes for many months after reading Chairman Mao's *Little Red Book* for inspiration. I had been fascinated by the huge fierce-looking "Tiger Dogs" that guarded the entrance to

Chinese temples, and always had one paw on a large ball. I had heard that the Chinese bred them especially for this purpose, but as each generation of dogs got closer to the "look" the Chinese wanted, the dogs kept getting smaller and ended up being what we call the Pekinese toy dogs. I bought two alabaster palace dogs for $6 at a wholesale shop in the Chinese shopping area.

I took the ferry to the Portuguese colony of Macao the following morning, and took the standard $26 tour (Hong Kong dollars) with a pretty Chinese girl named Frances Place as my guide. She was a Catholic and had married a Portuguese man. Portuguese were less than ten percent of the Macao population and had intermarried freely with the Chinese. We went to a Buddhist temple, where she explained their gods, to the house of one of Dr. Sun Yat Sen's wives, and to the Red Chinese border, where Frances said I shouldn't take pictures of the guards because they thought the camera captured their spirits. The highlight of the tour was visiting the gambling casinos. We had dinner in a gambling den that was built like a giant roulette wheel. Rich Chinese from Hong Kong were big gamblers in Macao. I watched one Chinese woman at a blackjack table bet hundreds of dollars again and again on her hand, and she always lost. In a few minutes she had gone through $20,000 in chips. Macao was very charming. It had a Mediterranean atmosphere, despite the Chinese population. Many buildings were in the Portuguese style, and stately manor houses dominated the hilltops. We took a fast hydrofoil boat back to Hong Kong, and learned that the Soviet ship, *Priamurie*, that would take me to Nakhodka had docked at 4 PM.

The next day I was measured for two hand-tailored suits and a sport coat, and bought a *Pentax* camera, and a 200 mm *Panagor* telephoto lens. A day later I was fitted for my suits. Most items were sold from street stalls in the Chinese shopping district. One vendor had cages of live snakes lined up for sale. I was reminded of Dr. Kawasaki, a Japanese scientist who was working with my advisor, John Brittain, when I was a graduate student at Northwestern. He told me that primitive people in the mountains of Japan ate "snake rice." Live snakes, rice, and soy sauce were dumped in large caldrons with holes in their lids. The caldrons were then heated over open fires and the snakes wiggling around inside stirred the ingredients. When it got too hot, the snakes would try to escape through the holes in the lid. The holes only allowed the snake heads to poke through and, when each head appeared, the "cook" would grab it between thumb and forefinger and pull out the head and spine, everything else being stripped off because it wouldn't fit through the hole. When all the heads and spines were pulled out, the snake rice meal was ready to be served.

The *Priamurie* left Hong Kong at 11:45 AM, and steamed over calm seas until evening, when the water got rough. The ship rolled, pitched, and shuddered in the waves. My cabin was up on the bow of the ship and I got seasick for the first time in my life, eventually "driving the porcelain bus" (which means gripping the ceramic rim of the toilet bowl while vomiting). My cabin mates were a Hungarian and a German. Others on board were a Kiwi, two Aussies, a Scot, an English hippie family, two Eurasian couples (English-Chinese and Swedish-Japanese), an Alaskan couple who knew my cousin, John Hughes, in Anchorage, and many Japanese. After two days of heavy seas, we had a warm, quiet day on 15 March 1971 that brought the passengers out on deck. I got to know some of them and will resist telling their stories here, except in two cases. The Swede was a retired army officer. He thought the Vietnam War was "a brilliant diplomatic stroke" for America, because the Reds had an understanding that China could carve out satellite states in Southeast Asia to balance the Russian satellite states in Eastern Europe. But China was unable to give North Vietnam the military support it needed, so the Vietnam War forced Russia to move into China's sphere of influence just as China was embroiled in the Great Proletarian Cultural Revolution and could not defend its turf. So that's what 67,000 American boys died for! The English hippies had spent several months in India. Their delightful child, Dominic, raved about the "vibes" he got from Indian temples. When I mentioned the crippling and blinding of children in Calcutta by their parents, so they would be more pathetic beggars, his parents said that didn't bother them because it was linked to worship of a Hindu god. Bowing down before a stone idol made such child abuse acceptable!

Fortunately they probably wouldn't have to consider breaking little Dominic's arms and legs, putting out his eyes, and sending him out onto the highways to beg for them, because they had money. They were traveling First Class.

The next day was cold and windy, so people stayed inside. I got to visiting with John Brinks, who knew my cousin, Johnny, in Anchorage. He was in communications, and knew many film and stage personalities who came to Anchorage to perform. Charles Laughton showed up with a thin blond youth who was his "kept boy" and dropped dead there. Mercedes McCambridge was like a marionette in her play and it bombed. Bette Davis and Joan Crawford were shrewd in business but failures in love. Gary Cooper was a true gentleman. John Wayne was a promoter. Clark Gable was the American masculine ideal. Laurence Olivier was the best technician among actors. Brinks asked my opinion of the movie, *2001*. I said it was a paganization of the Christian concept of three levels of creation, the natural order, the human order, and the angelic order. That led to a discussion of religion, and around we went.

The *Priamurie* arrived in Yokohama on Saint Patrick's Day. I strolled through the harbor district with the two Aussies, Kevin and Bill. When we returned to the ship, the Russian staff and crew were sponsoring a dance for the tourists. Japanese men eagerly danced with the big Russian women, but we white men were "yellow" when it came to that. Japanese going to Europe on the Trans-Siberian Railroad boarded the next morning. My cabin mates were a Kiwi and Barry, a Scot (again!). That evening we discussed movies and guns with the two Aussies and the Brinks couple. I said a movie that would be great box-office and would also be a great acting challenge would be a serious portrayal of Hitler as a human being instead of caricaturing him as a fiend. In casting the parts, Brinks wanted George C. Scott playing Hitler, I thought Alec Guiness could "do" Hitler. I wanted Orson Welles for Churchill, but Brinks wanted Peter Ustinov. Someone wanted Rod Steiger to play Mussolini. We couldn't agree on casting Stalin.

On the following day, the *Priamurie* steamed along the east coast of Honshu and passed through Hokkaido Strait, just missing the ferry from Honshu to Hokkaido. Dolphins followed our ship for awhile. The ballroom showed a film of the first Russian space walk. Brinks criticized it on technical grounds, but the movie was dramatic—no question about it. The *Priamurie* arrived in Nakhodka the next day. It had grown considerably since my visit five years earlier. After an hour of formalities, we were on the train to Khabarovsk. My cabin mate was a Russian named Victor. Khabarovsk and Yokohama were "sister cities" so the Japanese were greeted by the local reception committee. In the restaurant, a Swiss at my table marveled at the big, beefy Russian women. I told him the Brinks' story about taking a bus to see "the most beautiful women in Mexico." When he arrived in the southern Mexican village where they lived, he saw three huge Amazons. One boarded the bus and when she stepped on the whole bus leaned toward her. As she walked down the aisle, the bus swayed from side to side with each step. When she sat, she filled a bench for three. In Mexico, big is beautiful. The first Victor got off at Khabarovsk and another Victor came into my cabin, only this one had strong Mongolian features. Like most Russians, he was interested in salaries and the cost of living in America. When we passed through the Jewish Autonomous Oblast near Khabarovsk, he said it was one of the best parts of Siberia. When he left the train at the next stop he said, "I have one question. How can you travel as you do and still have your job when you return?" I said I could lose my job, but I was single and didn't worry about getting work. "But how can you do it?" he persisted. "I'm a free man," was all I said.

As dawn was breaking the next morning, the train was in mountain country around Lake Baikal, and we got glimpses of the "Siberian Sea" through the trees. It had been snowing and we passed through a small, narrow river valley in the mountains where there were log villages, temporary log bridges across the river ice, and farmers out with their horses, all blanketed with fresh snow. It was positively beautiful, like an old American Christmas card. After Irkutsk, the country became gently rolling hills clad with forests. We arrived in Novosibirsk on 25 March 1971. By then the snow was dirty and made the slums along the railroad tracks look even crummier than they were. A young Russian who taught English got on

the train at the next stop, and the English-speaking men started to kid her and then ridicule her. It got so bad I left. She wanted to study the American, Australian, Scottish, etc., accents so she endured it all. The Japanese were polite and they thanked her as she left. She said, “I enjoyed talking with you, too, and I thank you—but not you!”, as she looked at the others. Then she went to her cabin.

We passed through the Urals the next day, where a sign had an arrow pointing east above “Asia” and an arrow pointing west above “Europe.” Vladimir, a postgraduate English teacher, got on the train, and visited with the Aussies and me all the way to Moscow. We covered what the aftermath of a nuclear World War III would be like, the incident off Martha’s Vineyard where a Lithuanian escaped from a Russian trawler (spy ship) and was picked up by the US Coast Guard, who then let the Russians come aboard, beat up the Lithuanian, and take him back to the trawler, a comparison between Russian and American medical treatment, American decadence versus Russian censorship, Marxism, religious freedom, Soviet slave labor camps, the Middle East, and the difference between Lenin and Stalin. It was a fascinating exchange with a lot of good humor, and I wrote it all down, but the views were mostly predictable so I’ll not repeat them.

The train arrived in Moscow at noon and I gave the Swiss and two Scots my free tour of the Kremlin. The Scots appreciated that it was free. The next day I took them to the Vdank Exposition grounds via the Moscow Metro. I took the train to Paris the day after that, and shared my cabin with a French atheist girl who was studying early revolutionary Russian literature in Moscow. She said there was a renewed curiosity about religion in Russia, and a real generation gap with teenagers, who want to read the Bible, but none are being printed. They long for the Christian fellowship they see among old Russians who lived before the Communist revolution. She recalled one girl who told Christian Bible stories to a group of Young Pioneers (the Russian version of the Hitler Youth). They listened intently because she was telling such beautiful stories that were forbidden. The next morning, when we were walking down a street in Brest, I told her about the intense religious experience I had had in the Russian Orthodox church in Samarkand in 1966, when the priest blessed me with his small cross, touching my head and each shoulder, as I kissed the large crucifix cradled in his arm during the Orthodox Mass. She said that when her father had a nearly fatal auto accident, “Even though I cannot believe in God, at that time I prayed and I believed.” Her father lived.

The train to Paris took me through Poland and Germany to Luxembourg, where I had time for sightseeing. Right at the train station was an artist making a colored chalk painting of Jesus Christ on the sidewalk. I took pictures. Right away I was reminded of how Catholic Luxembourg is. The city was built on rolling hills dropping down into the Rhineland. It was picturesque and prosperous. The year my mother died, she inaugurated a Round Robin to be circulated among the children and grandchildren of her parents, Jacob and Clara Schiltz, whose parents came from Luxembourg. It was a chain letter going from the oldest to the youngest. When one of us got it, we took out our old letter and put in a new letter so everyone kept in touch with what went on in the year or so it took the Round Robin to make its round. I got it shortly after I returned to Ohio, and in my new letter I described my visit to Luxembourg. Then I wrote, “Everyone looked Jewish.” Lucille Schiltz, my Godmother, was not amused, and said so in the letter she sent on. The flight from Paris to Columbus in Ohio took me over the southern part of the Greenland Ice Sheet on a clear day, so I got some good photos.

Orheim Bull Schytt

Olav Orheim returned to Deception Island for one month the following year to complete mapping the mass-balance stratigraphy down the north wall of the ice crater, and to re-measure the heights and separations of the bamboo poles for mass-balance and surface strain rates that we had planted on Deception Island and Livingston Island at the end of our 1970-1971 field season. By then, Olav had been awarded his doctorate. The dust layers in the ice crater gave him a mass-balance record that went back to

1680 AD, a very long record to be stored in a small glacier. He also demonstrated that the mass-balance in that part of the Southern Hemisphere had been out-of-phase with the mass-balance of Northern Hemisphere glaciers in similar high latitudes since 1816 AD, and that the out-of-phase periodicities were 11 and 20 years, which correlated with well-known solar insolation periodicities linked to Sun Spot cycles. These results were first reported in a famous paper in the *Antarctic Journal of the United States* (July-August 1972) authored by Olav Orheim, Colin Bull, and Valter Schytt, which has survived in glaciological lore as the Orheim Bullshit report.

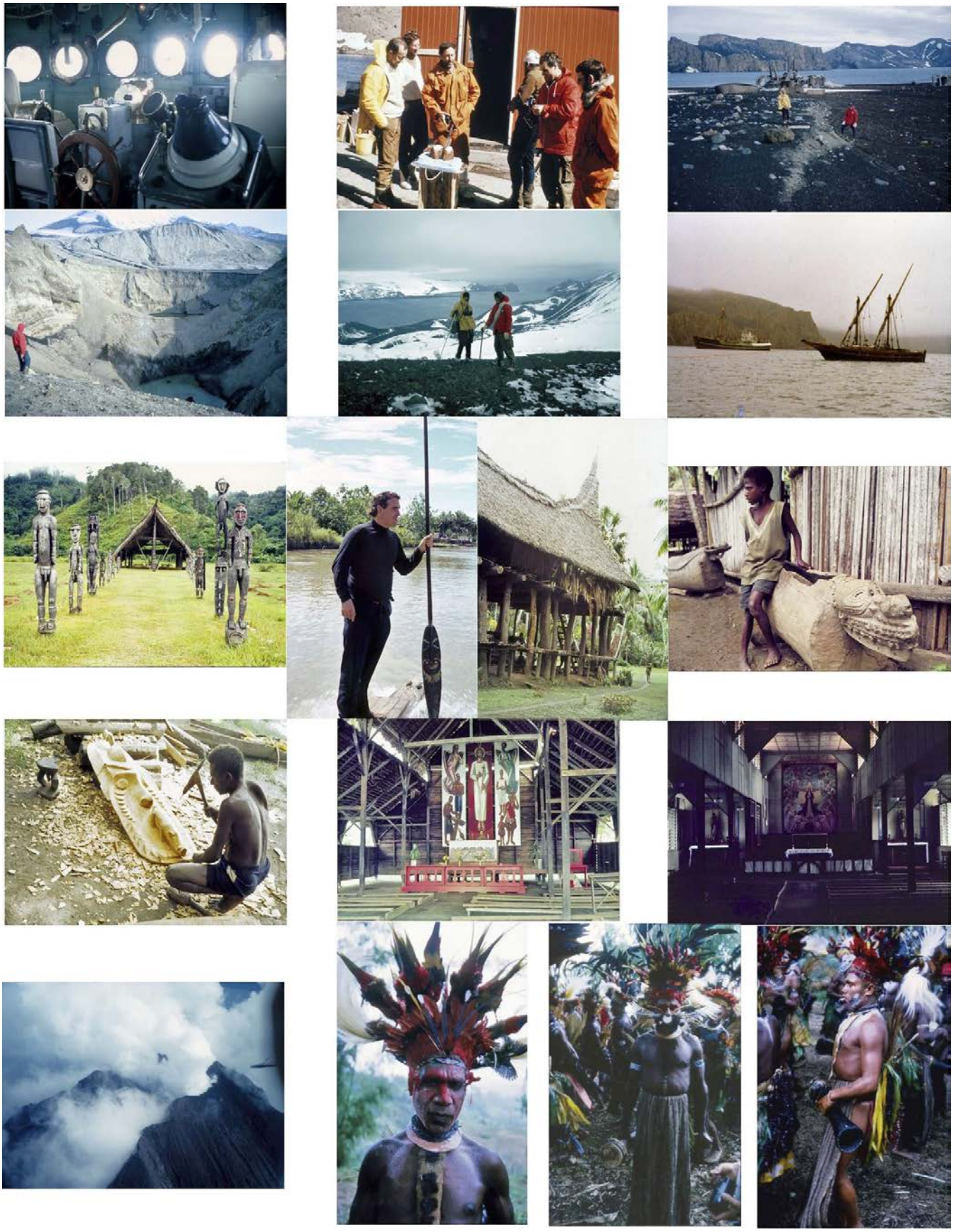
Colin Bull, in addition to being the Director of the Institute of Polar Studies at The Ohio State University, was Olav's dissertation advisor. Valter Schytt, in addition to being the Chairman of the Department of Geographical Sciences at Stockholm University, was the President of the International Glaciological Society. Valter had come to Ohio State on sabbatical, along with his wife and daughters. His daughters were gorgeous. His wife had the high singsong Swedish accent that anyone who has grown up in South Dakota, as I have, would recognize at once. On one occasion I had to call Valter at the house in Columbus where they stayed. His wife answered the phone, saying in her best singsong, "This is the Schytt house" (shithouse?). I replied, "Oh, I didn't know you had an outhouse with a phone." She didn't get it and I didn't explain. It was funny to hear English-speaking people, trying to be polite, pronounce "Schytt" any way but "shit" but the two words sound very much alike with the proper pronunciation. Valter took it with great good humor, and was most amused of all by their verbal gymnastics. The sequence of authors on the Orheim Bullshit report, while quite proper, was chosen with glee by the three glaciologists.

Valter was quite tall, about 6 feet 8 inches. When Senor Gonzales took them to the USARP warehouse in Punta Arenas to be outfitted with field gear for the month on Deception Island, they discovered that the place had been looted and what remained did not completely clothe all three of them. They went to local stores to buy winter clothing, but Chileans are generally short people. Olav and Colin were both on the short side, so they could be accommodated, but not Valter. Trouser legs only went to his knees and coat sleeves only went to his elbows for even the largest sizes. He looked like he was wearing a Little Lord Fauntleroy outfit, Colin and Olav reported (no photos verify their story). Somehow they managed to fit Valter. Maybe they bought two outfits and sewed the two sets of arms and legs together, but I expect there was a more dignified solution.

Gerry Holdsworth had been awarded his doctorate when we finished drilling his boreholes on Meserve Glacier in Antarctica, and had recorded the temperatures and inclinations down the holes. His doctoral dissertation didn't use our data. It was focused on his own work conducted during two previous field seasons, which included digging a stand-up tunnel 55 meters long from the base of the ice wall near the Jamesway, plus lateral tunnels, for a total of 112 meters of tunneling, measuring the creep rate of ice, the ice temperature, and taking ice samples at various sites in the tunnels, as well as temperatures and tilt rates down two core holes from the glacier surface down to the tunnels, as described in the *Antarctic Journal of the United States* (July-August, 1967). I published the ice temperature and velocity profiles down our three boreholes in the *Antarctic Journal of the United States* (July-August, 1971), and I sent the films and data for the tilt rates to Gerry, with my preliminary plots of the temperature and inclination profiles, so he could use them to produce a "flow law" of ice through the whole ice thickness. He never made that study, to my knowledge. It was his project, not mine, so the decision about what to do with the data was his to make. In 1975, I published a theoretical analysis of the surface wave train down Meserve Glacier, in which I was able to duplicate the wave shape and spacing by combining measured rates of longitudinal compression and surface ablation (*IAHS-AISH Publication Number 104*).

Masayuki Nakagawa, a Japanese glaciologist, came to the Institute of Polar Studies as a visiting

scientist in 1972. He and I measured the ice fabrics in and between the shear planes of the ice samples I sent to Ohio State from the ice wall of the glacier crater on Deception Island. We also conducted creep experiments on ice we made by freezing wet compacted snow, so it had air bubbles like glacier ice, and a random ice fabric. Using a creep machine that I designed to measure strain rates in simple shear, uniaxial tension, and uniaxial compression, and that machinists in the physics department on campus built, we were able to duplicate the ice fabrics in and between the shear bands in ice samples I brought from the calving ice wall of the glacier crater. We showed that simple shear produced the ice fabric in the shear planes, and was compatible with the stress field produced by the crater, and that the ice fabric between shear planes was compatible with the pre-eruption stress field. Our results were published in the *Journal of Glaciology* in 1989 (volume 35, number 120).



Photos for Chapter 7: Fire and Ice

Photos are numbered from left to right and from top to bottom.

1. The wheelhouse of the *Zapiola* as it crosses Drake Passage on the way to Deception Island, Antarctica.

Note the brass fittings and wooden helm. *Zapiola* is now at the bottom of Drake Passage.

2. The First International Deception Island Volcanological Expedition arrives at the Argentine base on Deception Island. From left to right they are Olav Orheim (Norwegian), Peter Baker (English), Nestor Fourcade (Argentine), Litterio Villari (Italian), me (American), and Ian McReath (Scotsman). Absent is Leonid Govorukha (Russian).

3. A mudslide from the 1967-1970 volcanic eruptions surges through the Norwegian cemetery, exhuming coffins, and smashes into the abandoned Norwegian whaling station.

4. Craters produced by the 12 August 1970 volcanic eruption. Green water lies at the bottom of one crater but yellow water lies at the bottom of the other crater.

5. Olav and I on the caldera rim of Deception Island above the Argentine base, looking at the flooded caldera (Port Foster) and the entrance to the caldera (Neptune's Bellows).

6. The *San Giuseppe Due* enters Port Foster from Ushuaia, Argentina. It was built, owned, and captained by Giovanni Ajmone-Cat, an Italian navigator and member of the Italian gentry.

7. A House Tambaran (spirit house) in Ambunti, New Guinea, is guarded by wooden statues of naked headhunters in pagan days. This exhibit is maintained as a tourist attraction.

8. I am on my 300-mile trip down the Sepik River in New Guinea, the last redoubt of headhunters. The slender paddle is used to move canoes hollowed out of large logs.

9. This House Tambaran (spirit house) still being used in Kanganaman on the Sepik River.

10. Two canoes hollowed out from big logs in the village of Angoram on the Sepik River. The carved crocodile head at the bow of the canoes is typical. Canoes are manufactured in Angoram.

11. A craftsman constructs one of the large shield masks that are shipped all over the world.

12. Inside the airy up-river Catholic church at Angoram. Paintings by native artists add elegance.

13. Inside the more traditional Catholic church in Marienberg, a prosperous down-river village.

14. I fly over a smoking volcano on a small chartered airplane from Angoram to Mount Hagan.

15. A native dancer at a "Sing Sing" staged for tourists at a mountain village near Mount Hagan.

16. The Sing Sing is underway with drummers and dancers in traditional headhunter attire.

17. This muscular copper-skinned redhead stands out at the Sing Sing. He's beating a drum.

CHAPTER 8 - THE ICEBERG THAT SANK THE *TITANIC*

The red lines on the global hemispheres show the maiden voyage of the *Titanic* and the probable route of the iceberg that sank it in 1912.

When the waters lie covered as though by stone that holds captive the deep. Job 38:30

A gray sky hung low over the middle maritime latitudes of North America's Atlantic seaboard. Wooly mammoths swept away the snow with their long curving tusks, exposing the grassy vegetation beneath. They ripped out swatches with their trunks, again and again, until a sizable bundle was encircled and lifted between the massive jaws and reduced to pulp by the grinding of giant teeth. A small herd of musk oxen grazed behind the mammoths, following the paths the furry elephants had cleared. Perhaps a mile away, on the northern horizon, the snow cover gave way to a great sheet of ice that grew thicker and higher for two thousand miles to the northwest and covered half the continent. It had slowly crept southward over thousands of years, sometimes shooting out lobes of fast-moving ice, like mechanized Panzer divisions, that established the latest perimeter of advance. Life retreated before this remorseless, frigid embrace, and became adapted to surviving along its perimeter. The ice lobes were termini of rapid currents of ice that developed deep in the heart of the ice sheet, as the slow sheet flow converged to become fast stream flow. The ice streams probed weaknesses in the land's defenses, seeking long valleys or lakes in the landscape, then rushing into these avenues to the south and only halting when the land leveled off, causing the ice streams to spread out and thin, thereby exposing the low broad surfaces of ice lobes to rapid melting by the more intense solar rays of the mid northern latitudes.

In this way, the ice sheet had sent its ice streams down what was to become known as Hudson Strait, the Gulf of St. Lawrence, the Gulf of Maine, and Massachusetts Bay on the Atlantic coast and, proceeding westward, down the Hudson River valley, the Great Lakes, the Des Moines River valley, the James River valley, and lesser river valleys all the way to Puget Sound on the Pacific Coast. Ice streams remaining on land then spread out as ice lobes that coalesced to create a new continuous ice front across North America. When ice streams advanced along straits or inter-island channels and entered deep water, they became vertical walls of ice from which slabs of ice calved into the ocean. Farther north, the ice streams became floating ice tongues that spread out upon leaving the straits and channels, to coalesce and become floating ice shelves. During centuries of the most intense cold, when Earth's rotation axis had the least tip toward the sun, an ice shelf covered the whole Arctic Ocean and was fed by ice streams from

North America, Greenland, and Eurasia. The Greenland Ice Sheet had advanced to the edge of the Greenland continental shelf, which had been exposed by the lowered sea level during the great Ice Age. An ice sheet also covered the Arctic continental shelf of Eurasia, from Spitsbergen to Alaska, and had advanced southward onto the North European Plain, the North Russian Plain, the West Siberian Lowland, the central Siberian uplands, and had merged with the icefields of the northeast Siberian highlands and the Alaskan Brooks Range. Perhaps the Eurasian and North American ice sheets met on the Beringian land bridge between Siberia and Alaska, and together they drained into a huge ice stream that passed through Bering Strait and spread out onto the exposed continental shelf of the Bering Sea to calve into the Pacific Ocean or, at times, to continue as a floating ice shelf to the Aleutian Islands, with icebergs calving between the islands. At these times of maximum southern advance, almost half of the Northern Hemisphere landmass was buried beneath ice up to three miles thick. This great sheet of ice ruled the Pleistocene for nearly a million years as the Empire of Ice.

Along the Eurasian southern ice perimeter, wooly mammoths and musk oxen grazed from Ireland to Alaska, along with Irish elk, wooly rhinoceros, and other large grazing animals not found in North America. Carnivorous predators hunted these shaggy beasts, notably lions, saber-tooth tigers, packs of large roving wolves, and curious hunched creatures that walked about on two legs, wore animal skins, and unlike any of the other predators, hunted with spears they had fashioned with their hands, because they lacked the natural weapons of tooth and claw.

During these long millennia of the Pleistocene Ice Age, convective storm systems developed in the North Atlantic and brought moisture-laden air from the warm Gulf Stream over the cold Greenland Ice Sheet, where the air cooled, the water vapor condensed into ice crystals, and the ice fell onto the ice sheet, keeping the ice elevation high even as gravity caused the ice surface to lower as the ice sheet advanced its perimeter. As the countless ice crystals became buried beneath other ice crystals and began their long march from the high ice surface to join the advancing ice along the perimeter, the curious creatures who walked upright and hunted mammoths along the Eurasian ice margin encountered other upright creatures like them, but from the south. How those living along the ice margin interacted with these newcomers is lost in the mists of prehistory, but the newcomers also learned to survive at the edge of existence, and they eventually made their way across the Beringian land bridge into North America and, migrating ever southward, reached the southern tip of South America by the time the great Northern Hemisphere ice sheet was in irreversible retreat.

As Earth’s rotation axis tipped ever closer to the sun in the Northern Hemisphere, the great ice sheet was carved away along its marine and lacustrine margins as slabs of ice calved into embayments and melted back along its terrestrial margins, which had been over-extended during the preceding centuries of intense cold. By this time, our ancestors, the mammoth hunters, had mastered the rudiments of agriculture and had established settled farming communities in the river valleys of the Nile, the Tigris-Euphrates, the Indus, and the Huang Ho, and on islands and coastlines along the southern Eurasian landmass. Rising sea level as the ice sheets melted sometimes took big jumps as calving bays along ice margins drained enormous ice-dammed lakes, and as ice domes over marine embayments collapsed rapidly as their frozen beds thawed into a mushy soup of saturated marine sediments. This gave rise to flood legends among the people living in river deltas, along coastlines, and on offshore islands who had to flee from the rising waters that inundated their farms and villages. These events became part of the collective folk memory of mankind, the memory of an antediluvian world that vanished forever beneath the waves, the “lost continents” of Atlantis and Mu. When writing was invented, these memories had become legends that were written down for all future generations. One such legend became part of the patrimony of people who fled from the rising waters in the Tigris-Euphrates valley and founded the new city of Ur. A man named Abram migrated westward from Ur and became the father of nations who trace their roots to his covenant with his God, the God of Abraham.

The ice crystals that fell onto the Greenland Ice Sheet, when mammoths were grazing in maritime North America, were making their slow journey to the sea as our first agricultural communities produced the first civilizations in the river valleys of the Nile, the Tigris-Euphrates, the Indus, the Ganges, the Yangtze, and the Huang Ho, on the islands and coastlines of the Aegean Sea, and in the jungles of Central America. Great empires rose and fell as the buried ice crystals that once fell on a surface thousands of feet high now moved only a few hundreds of feet above the base of the ice sheet. At those great depths, the overburden pressure of ice that had trapped the air in the snow on the surface, creating bubbly ice, now had become great enough to force the air inside the bubbles to dissolve into the ice crystals themselves, making the ice as clear as glass from there to the bed. A descendant of Abraham was born in the town of Bethlehem, and became the central figure in salvation history that, in turn, gave birth to a great flowering of human creativity that has become known as Christian civilization. The architects of that civilization marked time itself as proceeding backward and forward from the birth of this remarkable man, years before Christ (BC) and years after Christ, *anno domini* (AD).

In 1492 AD, an Italian navigator in the service of the King and Queen of Spain crossed the Atlantic Ocean in three small caravels and discovered a New World, a world that twelve millennia or more had already been discovered by the mammoth hunters who crossed the land bridge from Siberia to Alaska, and had begun the long journey to the tip of South America. Their descendants founded the civilizations that accumulated the gold and silver the Spanish monarchs sought and that changed hands many times in the course of trade and conquest on the European continent, and which led to a great migration of European peoples to the New World. The riches of the New World had financed great advances in science and technology that, by 1850 AD, produced what came to be known as the Industrial Revolution. In the half-century of relative peace and prosperity in Europe that followed, European population soared as families moved from rural farms to seek a brighter future in urban factories, or in the open lands of the New World. The tide of emigration from Europe swelled as a prolonged cooling known as the Little Ice Age caused a blight of the potato crop in Ireland and shortened the growing season in Sweden. By this time, the ice that fell over Greenland as mammoths grazed in North America and Eurasia had entered ice streams that developed along the margin of the Greenland Ice Sheet, and was moving thousands of times faster than after it first landed on the ice surface.

By the turn of the century, a quarter of Earth's land surface was ruled by the British crown. The British Empire was built not by armies marching over seven continents, but by ships sailing the seven seas. It was an empire based on trade and commerce, the largest empire the world had known. Many of the largest steamships were built at the Harland and Wolfe shipyards in Belfast, an industrial city in northeast Ireland. By then, the most profitable shipping routes were across the North Atlantic, between the nations of Western Europe and the United States. Trade and immigration were the twin engines driving this trans-Atlantic commerce. The White Star Lines commissioned Harland and Wolfe to build the two largest ocean liners of that day, the *Olympic* and the *Titanic*. Each ship took four years to build. When the *Olympic* made its maiden voyage, Bruce Ismay, owner of the White Star Lines, decided to convert some of the deck space on the *Titanic* into first and second class cabins, and to make even more luxurious appointments to existing staterooms, so the *Titanic* would be both the largest and the most palatial ship ever built. The reduced deck space required reducing the number of lifeboats stored on deck. But that didn't matter. *Titanic* was unsinkable.

As the day for christening the *Titanic* approached, the ice that fell when mammoths grazed, and that had entered a fast ice stream that emptied into a fjord on the west coast of Greenland, had finally reached the floating terminus of the ice stream. The gravitational force that had pulled the ice forward from the moment it landed on the ice sheet had by now opened gaping primary transverse crevasses along the floating ice tongue. A giant iceberg was released when the tips of the crevasses that opened on the top and bottom surfaces of the floating ice met. The iceberg was one mile square, and it drifted slowly down

the fjord and out into Baffin Bay. Great slabs of ice calved from its perimeter as it moved along, shifting its center of gravity, so that the iceberg listed to one side. The surface current in Baffin Bay was driven to the right by the turning of the Earth, so that the ocean current in Baffin Bay that flowed northward along the Greenland coast, then turned westward at the top of Baffin Bay, and flowed southward along the coast of Baffin Island and Labrador into the North Atlantic shipping lanes across the Grand Banks of Newfoundland, carried the giant iceberg with it. The iceberg continued to disintegrate during this circuitous journey, and one large section turned belly up, exposing the clear ice that was produced when air bubbles that formed below the surface as snow was compressed into glacial ice had themselves become dissolved into the crystal structure of ice, under high pressures at great depths. From a distance, bubbly glacial ice looked white, but the clear bubble-free deep ice, now above water, took on the color of its surroundings, blue in sunlit skies and water, but black in the night.

The Irish shipbuilders shed tears of mixed joy and sorrow as they watched the great ship slide down into Belfast Lough on a sunny spring day in 1912, joy at seeing the work of their hands begin its maiden voyage and sorrow in the knowledge that most of them would never again see their four-year labor of love. Belfast was not to be a port of call for the *Titanic*. The maiden voyage was to begin officially at Southampton, on the southern coast of England, from there it steamed to Cherbourg, on the coast of Normandy in France, and stopped at Cobh (Queenstown) in Cork Harbor on the southern coast of Ireland, taking on passengers at each stop, before beginning its trans-Atlantic run to New York City. Its first class staterooms were reserved for the moneyed elite of two continents. One was John Jacob Astor, heir to the founder of the American Fur Company that had established a fur trading post called Fort Pierre in 1832, where Bad River empties into the Missouri, and where I grew up as a boy on the Hughes cattle ranch. Another was Levi Strauss, founder of Macy's Department Store in New York City, with his wife. A third was J. Pierpont Morgan, the American financier, who cancelled his reservation at the last minute. They occupied the upper decks. Second-class cabins were on the middle decks, but the occupants had access to the first class decks as well. Three such passengers were a man and his two sons, whom he had kidnapped from his wife, after she divorced him and was given custody of the boys. Third-class passengers were in the bowels of the ship on the lower decks in steerage accommodations. They were mostly poor immigrants, and were treated like cattle by White Star employees. The stairway from steerage to the second-class deck was barred by a steel gate that was unlocked only when employees had to pass between these decks.

As the Irish watched the *Titanic* steam into the setting sun, they thought, "What a grand sight it is!" Indeed it was, 46,328 tons driven by three giant screw propellers, 852 feet from stem to stern, and four tall stacks belching steam and smoke combined to present a majestic sight to the people gathered along the western shore. Ismay was eager for the *Titanic* to better the crossing time of its sister ship, the *Olympic*, and even when word came across the wireless from other ships warning of iceberg sightings, Ismay did not ask Captain Smith to slow the great ship. The sea was calm and invited a fast run to New York. One ship, the *Californian*, was only ten miles to the south and wired the *Titanic* that it was surrounded by sea ice. The wireless operator on the *Titanic* wired the *Californian* to "shut up" as its warnings were interfering with wireless messages from first-class passengers to friends and family who were to meet them in New York the following day. When cakes of sea ice slipped by his ship, Captain Smith ordered two of his petty officers into the crow's nest on the forward mast to keep a lookout for icebergs, but somehow binoculars had not been provided to them. It was a moonless night, with only stars to illuminate a calm black sea off the Grand Banks of Newfoundland. Starlight was not enough to illuminate the black iceberg, with its clear ice composed of ice crystals that fell when the Grand Banks were above sea level and mammoths were grazing on its grassy plain.

When the black berg in the black sea emerged from the black night, the two officers in the crow's nest only had minutes to alert the bridge. Captain Smith had retired for the night. The junior officer in

charge on the bridge hastily, and unthinking, ordered full speed astern and turned the rudder sharply to port, hoping to turn the great ship from the mountain of ice that lay dead ahead. But his orders only robbed the *Titanic* of its maneuverability, so that it was also adrift just as was the giant iceberg. A head-on collision under full speed would have been better, as that would have collapsed only the first three forward compartments below the waterline, and the steel bulkhead doors could have been closed to prevent water from entering the remaining compartments aft. As it was, the great ship was just beginning to turn as it passed the ice mountain, so that its starboard side ground against the ice, popping rivets from the steel plates of the first five compartments, one third of the length of the ship. Flooding five forward compartments added too much weight, so the water spilled over the tops of the bulkheads even after the steel doors were closed, filling the aft compartments one by one.

The glancing blow caused only a slight shudder of the great ship, and the grinding noise was heard only by those in the starboard cabins. People dancing in the main ballroom came out onto the deck and saw the iceberg fade away into the black night. They picked up fragments from the blocks of ice that had fallen onto the deck and put these in their drinks, as they returned to their revelry. Others who had been awakened in their cabins went back to sleep. Captain Smith had also been awakened, but he rushed to the bridge. Word was coming up from below decks on the damage, with water pouring in and spilling over the aft bulkheads. He knew at once that the *Titanic* was going to sink. Asking how much time remained, he was told not more than three hours. There was no hurry to lower the lifeboats, and passengers were reluctant to leave the ship, which seemed stable and sound as ever. Only when ordered to do so, did people begin to enter the lifeboats, and crewmen rowed the first lifeboats away from the *Titanic* with only a third to a half as many people as the boats were designed to carry comfortably. On the calm ocean, smooth as glass, they could have safely carried twice that number. As water flooded the lower decks, third-class passengers rushed up the stairway to the middle decks reserved for second-class passengers, only to find the gate locked and crewmen standing on the other side with loaded guns pointed at them, and shouting at them to go back below.

The wireless operator frantically tried to contact the *Californian*, but its wireless operator, having been ordered to “shut up,” had gone off duty. People on the deck of the *Titanic* saw the lights of another ship against the black horizon, and Captain Smith ordered rocket flares to be fired aloft, but the phantom ship made no response and slowly faded from view. The wireless operator finally made contact with the *Carpathia*, but it was seventy miles away.

As the *Titanic* took on a more pronounced forward list, and the aft section lifted higher and higher in the air, first and second class passengers began to realize that the ship was doomed, and crowded around the remaining lifeboats. With difficulty, crewmen separated women and children from the men and lowered the remaining boats. Levi Strauss kissed his wife goodbye, but she said, “We have been together all of our lives, and I’m not going to leave you now.” They both stayed on the ship, while Bruce Ismay, owner of White Star Lines, slithered into one of the remaining collapsible lifeboats that had been added when the company realized it didn’t have enough regular lifeboats to hold all the passengers. Amid all the screaming and shoving, the ship’s band had assembled on the top deck aft, and had been playing gay tunes to hold at bay the Angel of Death that hovered over the doomed ocean liner. Even when Captain Smith relieved everyone under his command of their duties, and ordered them to look after themselves, the band played on. As those in the lifeboats looked back at the majestic ship, and watched its stern rise higher and higher into the night sky, reaching up to Heaven’s Gate, they heard the band playing its last song, the plaintive strains of an old Welsh hymn, *Nearer, My God, to Thee*.

Then a loud series of muffled explosions were heard from deep within the ship, as the inrushing water hit the boilers. Some in the lifeboats said the *Titanic* seemed to break in two. Others said it just quietly slipped beneath the waves. In any case, it took 1517 of the 2223 passengers and crew with it, including Captain Smith and all his senior officers. Hours later, the *Carpathia* arrived and rescued the 706

who were in the lifeboats. It was 2:20 AM on 15 April 1912, one day from New York harbor. The "unsinkable" *Titanic* had been sunk by an iceberg consisting of ice that was perhaps a quarter of a million years old.

It was the greatest loss of life in maritime history. The major shipping nations on the North Atlantic seaboard established the International Ice Patrol, which was charged with the task of charting the tracks of all icebergs that entered the North Atlantic shipping lanes. Responsibility for carrying out this task was assigned to the United States Coast Guard (USCG) in 1914. By 1928, the charge included locating the origins of icebergs. A series of expeditions through Davis Strait into Baffin Bay between 1928 and 1935 identified 21 West Greenland glaciers that produced icebergs large enough to drift into the North Atlantic shipping lanes. Congress provided funds to construct five "Wind Class" cutters with icebreaking capabilities, the *Northwind*, *Southwind*, *Eastwind*, *Westwind*, and *Burton Island*. Later, an even larger icebreaker, the USCG cutter, *Glacier*, was commissioned.

Commander Ronald C. Kollmeyer, a professor at the United States Coast Guard Academy, decided that the next step should be to monitor iceberg production rates and the positions of the calving fronts for the ice streams that entered West Greenland fjords to become outlet glaciers that released the big icebergs. Kollmeyer was also interested in determining the physical mechanisms that produced the icebergs. He consulted the whaling literature in Greenland waters and came upon an account published in 1817 by Bernard O'Reilly, a surgeon on the whaling vessel, *Thomas*, out of Hull on the east coast of England. While the *Thomas* was in Baffin Bay, O'Reilly had occasion to observe giant icebergs released from the Greenland Ice Sheet. After reviewing the two prevailing opinions as to how the icebergs formed, O'Reilly offered as his own opinion that the release of giant icebergs took place in the summer months, when intense sunlight beat down upon the ice surface, causing accelerated weakening of natural fissures in the ice, causing icebergs, "those immense masses to be rent asunder from the continent, whence they are precipitated into the sea, and commence their progress to the southward." After imagery from Earth-orbiting satellites became available, it was seen that giant icebergs from Jakobshavn Isbrae were indeed nearly all produced during the summer months.

In 1848, Dr. Hendrick Rink, working with the Danish government, traveled to Greenland and observed that most icebergs were released from ice streams. Amund Helland, a Norwegian geologist and surveyor who visited Greenland in 1875, gave an account of his observations on how icebergs were released from Jakobshavn Isbrae, a large ice stream in Jakobshavn Isfjord on the west coast of Greenland at 69.2 degrees north latitude. Rink published Helland's account in his book, published in 1877, and surmised that tidal flexure along the grounding line of the floating ice tongue was the mechanism that produced the fissures along which the giant icebergs were released. From 1948 to 1953, the French Polar Expeditions conducted extensive explorations and field studies on the Greenland Ice Sheet, including the area, elevation and thickness of the ice sheet, the annual ice input by accumulation (446 cubic kilometers of water) and the annual ice lost by melting (315 cubic kilometers of water) and calving (215 cubic kilometers of water). The calving losses were almost entirely at the fronts of large ice streams, with particularly heavy losses from ice streams between 67.9 and 72.4 degrees north latitude on the west coast. By the application of optical filtering in coherent light to the study of aerial photographs taken of the west coast ice streams, large crevasses became prominent features on the ice surface. These crevasses could be used as moving markers to compute ice velocities from the photographs taken on flights about two weeks apart. Many velocity vectors were obtained for each of twenty ice streams between 67.9 N and 72.4 N by M. Carbonnell and A. Bauer, and published in *Meddelelser om Gronland* in 1968. Jakobshavn Isbrae was found to produce the biggest and the most icebergs by far.

Armed with this information, Kollmeyer initiated and directed the West Greenland Glacier Survey for the United States Coast Guard. Surveys in 1968 on the *Eastwind*, in 1969 on the *Southwind*, and in 1970 on the *Westwind* identified 59 outlet glaciers, with 26 producing large icebergs, as

documented by photographs from USCG helicopters, from Jakobshavn Isbrae in the south (69 degrees, 15 minutes, north latitude) to Petermann Glacier in the north (81 degrees, 30 minutes, north latitude). The two largest and northernmost, Petermann Glacier and Humboldt Glacier (with a calving front 60 miles wide) were not producing large icebergs in 1970. However, huge tabular icebergs that seemed to be grounded in Kane Basin were evidence that Humboldt Glacier had recently produced many icebergs. Petermann Glacier was thin and badly wasted in 1970, but the American *Polaris* expedition to the North Pole led by Charles Hall from 1871 to 1873 reported that Petermann Glacier was "a confused accumulation of bergs, crowded closely together, leaving such spaces only as were due to irregularities of form" in 1872. Kollmeyer concluded that iceberg production could be quite irregular, and repeated surveys were needed to detect these changes and to determine what mechanisms caused the changes. That became the primary thrust of the West Greenland Glacier Survey after 1970, and professional glaciologists were included in the expeditions.

In the spring of 1971, after I returned from Deception Island, Kollmeyer contacted Colin Bull, Director of the Institute of Polar Studies at The Ohio State University, to invite a glaciologist to accompany him on an expedition to Jakobshavn Isbrae and other ice streams on the west coast of Greenland that summer, for the purpose of investigating the mechanisms for producing giant icebergs of the kind that sank the *Titanic*. Colin asked me if I were interested and of course I was. I flew to New London, Connecticut, home of the Coast Guard Academy, and was met by Kollmeyer. He was an impressive figure, especially when wearing his formal Navy blue Coast Guard uniform with its insignia and polished brass buttons. Kollmeyer had a Clark Gable mustache and even looked a lot like Gable, except he was taller and more commanding in appearance, about 6 feet 3 inches, well built, and handsome, with dark shiny hair, bright blue eyes, white flashing teeth, and a suntanned complexion. As if that weren't enough, he spoke in a rich baritone, had a natural charm, an easy manner, and a ready sense of humor. He gave me a guided tour of the Academy and then took me to the rooms set aside for his West Greenland Glacier Survey activities. A large framed portrait of Admiral "Iceberg" Smith dominated one wall. Ron reviewed the history of the International Ice Patrol, the dominant role of Admiral Smith in conducting its activities, and his own plans to extend those activities to monitor the production rates of giant icebergs, to relate production rates to changing positions of the calving fronts of ice streams, and to identify the mechanisms that produced these icebergs.

We were to fly from McGuire Air Force Base in New Jersey on a Lockheed C 141 transport aircraft to Sondrestrom Air Base in Greenland. There, we were to meet the US Coast Guard cutter, *Westwind*, and proceed to Disko Bugt (Bay) in Baffin Bay, where the icebreaker would anchor near the entrance to Jakobshavn Isfjord and helicopters on the icebreaker would fly us in to Jakobshavn Isbrae. We would then establish a campsite on the north fjord wall near the calving front and conduct our measurements of ice velocities and study the mechanisms for releasing icebergs. If time permitted, we would move on to other ice streams between 67.9 N and 72.4 N, beginning with Rinks Isbrae, which was named after Dr. Hendrick Rink, and conduct the same investigations on those ice streams.

McGuire Air Force Base was big. We were assigned to the officers' quarters for the night and the next morning we went to the air terminal for the flight to Sondrestrom Air Base. Several C 141 transports were lined up on the ramp. They were impressive aircraft, dark gray in color, with wheels close under the fuselage, massive wings draped over the top of the fuselage and drooping to each side, four huge jet engines suspended from each wing, "tail wings" mounted across the top of a high tail rudder (called "horizontal and vertical stabilizers"), and twin cargo doors in front below the cockpit. I would have flown in a C 141 from Sondrestrom to McGuire in 1969 if I hadn't been determined to fly over the North Pole on my return from Antarctica. Now I could, but in the opposite direction. The flight to Sondrestrom was uneventful, and we had a day there before the *Westwind* arrived in Sondrestromfjord to take us to Jakobshavn Isfjord. That gave us time for some hiking. The ice stream that once occupied the fjord had

retreated some miles from the site of the base and was stagnating close to the ice-sheet margin. The fjord itself ended at the base, and a low winding valley continued on to the ice sheet. A small herd of musk oxen grazed near the base. The most interesting sight was the remains of a small Viking settlement just south of the base. It had been excavated by archeologists, so we could see how the houses and rooms were laid out.

When the *Westwind* arrived, we went down to the dock and boarded a launch that took us to the icebreaker. Then it weighed anchor and took us down the full length of the fjord to Baffin Bay, a full hundred miles, with the fjord walls getting higher and steeper all the time. Hanging glaciers overlooked the higher ramparts, and a meltwater stream from one became an arching waterfall that cascaded perhaps a thousand feet over a sheer precipice. I called it Pissing Glacier. A day later we had crossed the Arctic Circle and entered Disko Bugt, where we anchored near the village of Jakobshavn, about a mile north of Jakobshavn Isfjord. A great train of icebergs marched in single file from the fjord entrance out into the bay, like stately floating castles crowned with countless ice turrets that soared above the castle walls. Jakobshavn was a native Greenlander village. Greenlanders were an Inuit people, but they claimed some Viking blood and didn't like to be called Eskimos. The Inuit population was perhaps 2000 and I was told there were 20,000 dogs. I could believe it. Dogs were everywhere, and they howled around-the-clock, but especially as the sun dipped low on the horizon. Jakobshavn was a fishing village, but it was preparing to become a tourist attraction. Colorful wooden fishing boats dotted the harbor and the calm waters in Disko Bugt. A fish processing factory was located on the south side of the harbor, where the village ended, and a new tourist hotel was being completed. A stream at the head of the harbor was dammed to provide fresh water to the villagers and the factory. There were Catholic and Lutheran churches. The Lutheran church was of the original Norwegian stave church wooden construction, and was in a superb state of preservation. The village cemetery was on the hill at the north side of the fjord entrance, a pleasant mile's walk from the village. The houses were small, but well kept and brightly painted in primary colors. Streets were narrow and followed the terrain, rather than being laid out on a planned grid. We hiked about, but stayed on the *Westwind* for accommodations.

The next morning the two helicopters on the *Westwind* took us up Jakobshavn Isfjord to Jakobshavn Isbrae, a flight of about 50 kilometers. The fjord was about ten kilometers wide and was full of brash ice. But what caught our attention was a train of gigantic tabular icebergs moving slowly down the fjord. At first, they reminded me of Teddy Roosevelt's Great White Fleet of battleships that he sent around the world in the twilight of Western imperialism before World Wars I and II brought the old colonial empires crashing down. As we began to fly over them, other images came to mind. These icebergs were one kilometer square and would dwarf any battleship. Their steep sides rose nearly one hundred meters above the water, and icy pinnacles tens of meters high covered their tops like turrets on some massive castle. From the steep sides, we could see that the pinnacles were separated by crevasses, and were all that remained of an originally heavily crevassed surface that had been downwasted by melting. The pinnacles were a dirty gray color from either windblown dust that coated them or from grit in the ice that was left behind as the ice melted. There was no doubt in my mind that even a small fragment from one of these icebergs could sink the *Titanic*.

Eventually we saw an ice cliff ahead of us that stretched across the whole length of the fjord. It was the calving front of Jakobshavn Isbrae. The calving front was remarkably quiet. Jakobshavn Isbrae moved up to eight kilometers per year at the calving front, according to the photogrammetric measurements made by Carbonnell and Bauer during the French Greenland Expeditions at mid-century. It was the world's fastest glacier, and I expected more action. I was naïve. Eight kilometers per year is only about a meter per hour.

The helicopters flew over Jakobshavn Isbrae in a reconnaissance before landing, so we all got a good look at the glacier. Its surface in the fjord was just like the surface of the giant icebergs, a tumbled

chaos of pinnacles that was indeed the result of downwasting that was focused in countless criss-crossing crevasses. Solar energy entering the crevasses was reflected thousands of times between the crevasse walls, each reflection allowing a bit more melting, so the crevasses got wider and deeper until only ice pinnacles remained between them. There was a pattern to the really big crevasses. One set was longitudinal and another set was transverse. Together, they seemed to section the surface of Jakobshavn Isbrae into lines of weakness that formed a grid along which the giant icebergs were released at the calving front. The last ten kilometers of Jakobshavn Isbrae was floating in Jakobshavn Isfjord, and the grounding line at the head of the fjord was the foot of a huge icefall that separated two ice streams, a major trunk ice stream from the south that curved east and snaked deep into the Greenland Ice Sheet, and a smaller ice stream from the north that began locally near the ice-sheet margin. A large blue-water lake filled a deep depression at the foot of the icefall, and deep longitudinal crevasses extended from the lake to the calving front. They seemed to mark the boundary between the two ice streams, so I called them The Zipper. After many subsequent visits to Jakobshavn Isbrae, and with hundreds of velocity measurements, we learned that The Zipper was entirely in the main trunk ice stream. We saw two other sets of longitudinal crevasses, one set in ice near each side of Jakobshavn Isfjord. They may have formed from a combination of intense shear along the sides and from tidal flexure at the side grounding lines. The deep transverse crevasses extended from the grounding line of the trunk ice stream to the calving front. They extended across nearly the entire width of the ice stream, were about a kilometer apart, and intersected the deep longitudinal crevasses of The Zipper. Fracture through the whole ice thickness at these intersections seemed to produce the giant icebergs, not the intersections with longitudinal crevasses near the fjord sides. Transverse crevasses may have opened as a result of rapid longitudinal extension when grounded ice became afloat at the head of the fjord and tidal flexure bent ice along the ungrounding line.

The south fjord wall was lower than the north fjord wall, and Jakobshavn Isbrae spilled over the south fjord wall to form an ice lobe that extended several kilometers into a valley. Meltwater from the margin of the ice sheet to the south formed a stream that cascaded over a cliff at the head of the valley and ponded in front of the ice lobe. The ice lobe ended as a calving ice wall grounded in the lake. The lobe surface was buckled into transverse concentric folds caused by longitudinal compression along the lobe axis. The north fjord wall was the edge of a bedrock rampart that rose two hundred meters or more above the floating surface of Jakobshavn Isbrae. A trimline separated polished barren bedrock below from weathered bedrock that supported lichens and dwarf willows above. The trimline extended up to 200 meters above the glacier, but sloped down and met the water surface about thirty kilometers down the fjord. It seemed to mark the upper limit of ice when the calving front of Jakobshavn Isbrae was thirty kilometers down the fjord during the height of the Little Ice Age at the middle of the nineteenth century. The area of polished bedrock behind the north fjord sidewall provided many ideal campsites and sites for surveying the surface of Jakobshavn Isbrae, so our two helicopters landed there.

We put in a campsite about a kilometer behind the calving front. Ron Kollmeyer’s idea was to use the helicopters to drop purple dye on the more prominent ice pinnacles at various sites on the glacier, and we would then measure the ice motion by measuring the distance to each pinnacle with a laser rangefinder at a theodolite station near the campsite, and then tracking the pinnacle motion by measuring the changing theodolite angle. This plan worked fairly well. The helicopters succeeded in marking several pinnacles, and we were able to survey their motion over a period of two days. Even though the sun set each evening, we had continuous daylight and made round-the-clock measurements. We confirmed the ice velocities measured by Carbonnell and Bauer in 1964 using photogrammetric triangulation on aerial photographs. We got a sense of how fast Jakobshavn Isbrae was moving by putting the crosshairs of our theodolite at the tip of a pinnacle. Then we could actually see the pinnacle move away from the crosshairs over a timespan of only minutes.

Ron and I decided that we could use this technique to study the mechanism for releasing the giant

icebergs that were probably responsible for sinking the *Titanic*. I would write a research proposal with this goal, and submit it to the National Science Foundation. Ron would arrange for logistical support from the Coast Guard, and provide cadets from the Coast Guard Academy as field assistants. It was the first of my five expeditions to study Jakobshavn Isbrae that ended in 1986. We saw one giant iceberg being released during that first brief field season. It separated from Jakobshavn Isbrae along a transverse crevasse at a distance behind the calving front that was less than the ice thickness, so it rolled over shortly after it was free. It rolled by tipping backward toward the calving front, so we could see its surface from our survey stations. As the angle of tilt increased, the ice pinnacles began to tumble like tenpins that crashed into one another like dominoes. Tumbling began at the high far end of the tilting iceberg, so the pinnacles tumbled in a wave passing over the surface. The pinnacles then cascaded over the low near end of the iceberg, sending great plumes of water high into the air and leaving the surface of the iceberg remarkably smooth. As the iceberg continued to roll over, it began to disintegrate, with huge fragments being submerged and then rearing up out of the water higher than the iceberg itself, all accompanied by great thunderclaps of cracking ice. The surrounding water seemed to be boiling, as it churned and shot up jets of spray that looked like steam. Within just two or three minutes, that entire iceberg, as big as a city block on Manhattan Island, was completely reduced to brash ice. I finally saw the action at the calving front that I had expected when our helicopters first approached the world's fastest glacier

Photos for Chapter 8: The Iceberg That Sank The *Titanic*

Photos are numbered from left to right and from top to bottom.

1. "Pissing Glacier" in Sondrestromfjord as seen from the U.S. Coast Guard Cutter *Westwind* on its way to Jakobshavn Isfjord.

2. The *Westwind* at sea in Baffin Bay. The photo was taken from its helicopter.

3. The *Westwind* arrives at Jakobshavn Isfjord, Greenland, to begin the West Greenland Glacier Survey led by Captain Ronald Kollmeyer, U.S. Coast Guard Academy.

4. The Inuit village of Jakobshavn (200 people, 2000 dogs) and Jakobshavn Isfjord (background).

5. Jakobshavn Isfjord is full of icebergs. The *Westwind* sends helicopters to Jakobshavn Isbrae.

6. Tabular icebergs released from the calving front of Jakobshavn Isbrae. One like these may have sunk the *Titanic*.

7. A *Westwind* helicopter brings supplies to our surveying campsite on the north fjord wall of Jacobshavn Isbrae.

8. Seracs on Jakobshavn Isbrae. The helicopter dumped red dye on seracs along the centerline of Jakobshavn Isbrae so we could triangulate to them from our surveying camps on the north wall of Jakobshavn Isfjord, and thereby determine their changing elevations and velocities day by day.

9. A Coast Guard cadet (left) and I (right) collect surveying data from vertical and horizontal angles to the dye-marked moving seracs.

10. I'm logging surveying data between rounds of triangulating to dye-marked seracs. Distances between our two surveying camps were measured very accurately by a steel tape measure 100 m long and less accurately to the seracs by a laser rangefinder. My hands are red from the dye.

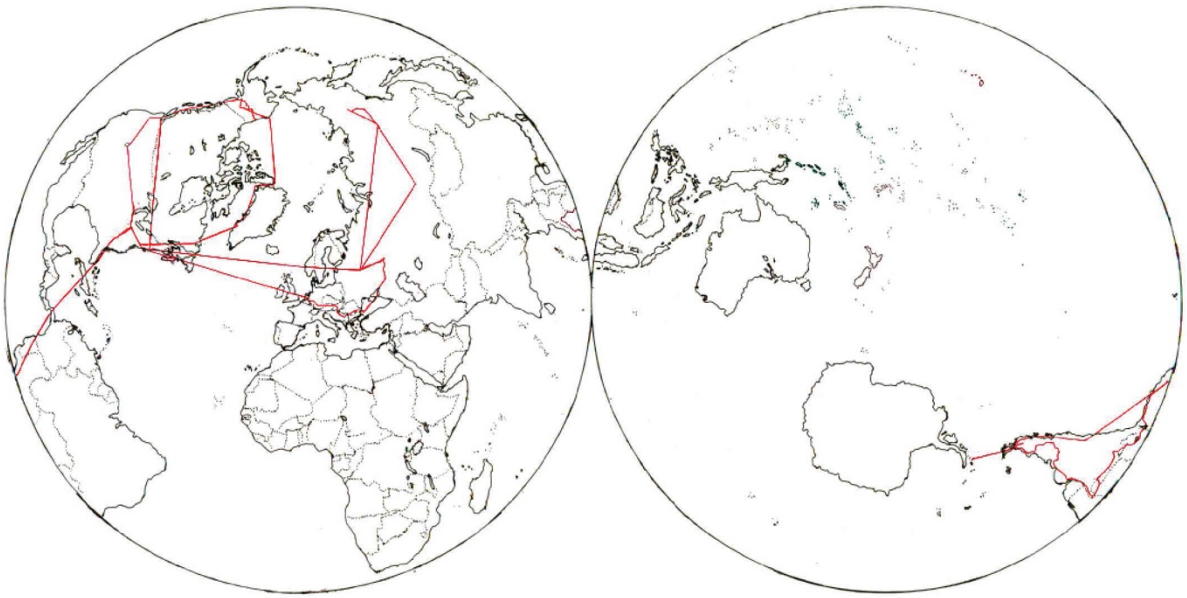
11. The orange tent shared by the Coast Guard cadet and me at our surveying camp.

12. Inside the Lutheran stave church in Jakobshavn village; the model sailing ship preserves the Danish seafaring legacy.

13. An Innuit fisherman with his catch just outside the village of Jakobshavn.

CHAPTER 9 – THE MAGIC CARPET

The red lines on the global hemispheres show travel routes beginning in Columbus, Ohio, to and from Deception Island in Antarctica, Fletcher's Ice Island in the Arctic Ocean, Siberia, and Alaska.



Which way to the parting of the winds, whence the east wind spreads over the earth. -- Job 38:24

Glaciology has been a magic carpet that has transported me to places I would have never seen, to visit people I would have never met, and to enterprises I would have never undertaken under other circumstances. Some of the most memorable of these are recounted in this chapter.

Return to Deception Island

Upon my return from Deception Island in 1971, I wrote a proposal to study the dynamics of how the crater that blasted through the glacier during the 1970 eruption was being closed by ice flowing into the crater from the sides, especially along the high ice wall on the north side of the crater. My study was funded by the National Science Foundation, and I was able to return to Deception Island during the Antarctic summers of 1972-1973 and 1973-1974, first to initiate the study and then to complete it. My first goal was to study the mechanism for calving of ice slabs into the crater by digging tunnels into the ice wall at various heights above the crater floor, and then establishing strain rosettes on the tunnel walls to measure ice deformation, especially the steeply rising shear surfaces that I had observed and sampled for laboratory studies during the 1970-1971 Antarctic summer. My second goal was to establish strain networks on the ash-covered glacier surface upslope from the crater to measure ice velocities and strain rates from the ice divide on the caldera rim to the crater. It was my first project as a Principal Investigator for NSF. Other members of my field party were Henry Brecher, a veteran of Antarctic field research who specialized in surveying, and two undergraduate students, Mike Scholz and Bob Curl. In addition to my study, Olav Orheim's mass balance study was to be continued by Norman Ten Brink, a postdoctoral research associate. He would be assisted by Jim Curl, a graduate student and Bob's older brother. We were all in the Institute of Polar Studies at Ohio State.

Norm Ten Brink was of Dutch descent and he grew up in New Holland, Michigan. He was a handsome young man in his late twenties, with a thin face and delicate features, blue eyes, light brown hair, and a slight frame, in the manner of the 1930s and 1940s Hollywood actor, Ronald Coleman. Norm

was married to a beautiful brunette and they had a new son, whom I called Eleven Brink. Jim Curl was more robust, a blue-eyed blond, and a Vietnam War veteran with the rank of lieutenant. Both were of average height and smoked pipes. Henry, Bob, and Mike were all smaller than average. Henry had a close-cut black beard and looked like a Jewish sage. He was to become my constant field companion for the next 20 years, and my closest personal friend. Bob and Mike looked like average students. Norm, Mike, the two Curls, and I left Columbus at 9:40 PM on 7 December 1972 and flew to Miami, where we met Henry the next morning. I had sent Henry to Cape Canaveral (then Cape Kennedy) to pick up a Hasselblad lunar mission camera that I hoped could be used to obtain metric photographs that would show ice motion into the crater by comparing the positions of fixed and moving features on sets of photographs taken a few weeks apart. Henry had witnessed the first night-liftoff of an Apollo mission (the Cernan mission). The flare from the Saturn rocket could be seen 500 miles away. I watched the liftoff on television, but Henry had a ringside seat. He said it was unforgettable.

Henry Brecher has led a remarkable life. He was born in Graz, Austria in 1932, where his father worked in the family wholesale and retail textile business, *Tuchhaus Rendi* (Cloth House Rendi), founded by his father's maternal uncle, Simon Rendi. The retail store was in a large building, the upper three floors of which were apartments, one apartment per floor, which were occupied by family members. His father Ernst was born in Slovakia in a small town near Bratislava. His mother Klary was born in the Hungarian district of Transylvanian Romania. Henry was an only child, although his father had three brothers and a sister. His parents observed the High Holy Days but weren't religious Jews. The Rendi name had been Rosenbaum, which was changed to aid assimilation. Shortly after Hitler annexed Austria to Germany in 1938, Henry's parents sent him alone to his "aunt and uncle," Felix (his father's cousin) and Edith Rendi, who lived in a villa on a large property in Zagreb, Yugoslavia. His parents were to join him later but never did. Edith's father owned textile mills and was wealthy. Her son, Peter, was two years older than Henry. Henry learned French from Peter's French-Swiss tutor, in addition to Serbo-Croatian. He experienced no anti-Semitism in Zagreb. Nonetheless, when the Germans invaded Yugoslavia in 1941, the Rendis sent Henry by train to Split on the Adriatic coast, where a childhood friend of his aunt Sida, lived with her husband, Rudolf Rosenthal, and their two children. Split was in Dalmatia, a province of Yugoslavia that had been annexed to Italy by Mussolini. In Zagreb, Henry's new "German citizenship" spared him from arrest by the local fascists, the Ustasi. Henry lived with Rudolf and Lydia Rosenthal and their children, Alfred and Edie, from 1941 to 1944 and learned Italian at school. Jews were barred from school when Italy switched sides and the Germans took over Split in 1943. Jews were being rounded up for deportation as allied planes began bombing Split. Henry watched the bombs drop, saw the harbor bombed, and a bomb fall on the house across the street. On top of that, he got appendicitis. He remembered wetting his bed. Rudolf was deported. The rest of the family, including Henry, had been rounded up with other Jews and kept in a warehouse for deportation but were eventually let go again. Lydia contacted Tito's partisans to get the family out of the country. Partisans got the family and many others out and a guide took them into the hills. They traveled nights and hid in partisan villages during the day. When they reached the coast, they were rowed to nearby islands in the Adriatic, then proceeded to Vis Island, where Tito had his headquarters. From there, they were taken to a refugee camp near Naples that housed 2000 or 3000 refugees. British troops were going through all the time, but no Americans.

Henry came to America on a ship carrying 1000 refugees (known as "Token Shipment") and wounded American soldiers in a convoy from Naples. There were alerts for German planes and submarines a few times, but they arrived safely in New York. Lydia had listed him as her son, Heinz Rosenthal, to get him on the ship, and gave his age as two years younger than he was so as not to overlap her own children's ages. Henry and the others, 90 percent Jews, were processed by German POWs, deloused, and sent by train to the Emergency Refugee Shelter at Fort Ontario in Oswego, New York. The fort had been built during the War of 1812, and was an army post with standard World War II barracks. Refugees were assigned to barracks converted to apartments having one to three rooms, depending on the

size of families. Henry joined the Cub Scouts (he couldn't be a Boy Scout because he was two years "too young") and went to public school in Oswego from September 1944 to February 1946. When the Shelter was closed, the Rosenthals brought him to live with them briefly in Brooklyn, after which he lived with his "uncle and aunt," Fritz and Stella (Rendi) Mayer in Manhattan, where Fritz was a wealthy stockbroker. Henry attended Joan of Arc Junior High School and in the fall of 1946 he went to Oakwood School, a Quaker boarding school in Poughkeepsie, New York. He stayed for five years, eighth grade and high school. Henry has been active in alumni activities at Oakwood since graduation and, as a result, was eventually asked to serve on its Board of Managers. He has been on the Board for over ten years. It was at Oakwood that he learned that his parents had died in a concentration camp in Poland (Izbica, near Lublin). Two of Henry's three uncles survived the war, Oscar Brecher, who returned to Graz from a prisoner's camp in Siberia, and Richard Brecher, a medical doctor, who managed to get to London as World War II began.

Henry entered Rensselaer Polytechnic Institute and graduated in 1955 as a mechanical engineer. While there, he enrolled in the Air Force ROTC program. He wanted to fly, but he failed the eye exam at the 1954 ROTC summer camp. Henry passed the eye exam when he entered active military duty at Wright-Patterson Air Force Base, after working at Stanley Aviation Corporation in Denver. It had been founded by Robert Stanley, the first American to pilot a jet plane. The Air Force sent Henry to Arizona for flight training in 1957. He soon realized he would be 30 before he was eligible for release from active duty. He dropped out of flight training and was transferred to the Texas boonies where he completed his tour of duty in 1958. Then he went to work for Pratt and Whitney Aircraft in Connecticut. One day he learned of a notice seeking observers to work on the Aurora Australis program in Antarctica, as part of the continuation of activities begun in the International Geophysical Year. He applied and was assigned to Byrd Station (80 S, 120 W) in November 1959. After his winter studying the aurora, in the Antarctic summer of 1960-1961 Henry was able to join the tractor-train traverse from Byrd Station to South Pole Station. Before the departure of the tractor train from Byrd Station, Henry met Dick Goldthwait who showed him how to do snow-pit stratigraphy. Although the goal of the traverse was to deliver two Caterpillar D8 tractors to the South Pole, some science was done along the route and Henry was named as glaciologist. He dug 30 snow pits to study snow stratigraphy on the month-long traverse. Afterward, he wrote his report at the Institute of Polar Studies, newly founded by Goldthwait at The Ohio State University (OSU). He entered graduate school to study geodesy in 1962 and has remained at OSU ever since.

Henry Brecher has been part of every glaciological expedition I headed, beginning with our expedition to Deception Island. Our plane from Miami had three stops on the way to Santiago, Chile; first in Panama, which was sultry and muggy even at 7 AM, then in Quito, which the plane approached through a narrow and barren Andean mountain valley, and then at Chavez Airport in Lima. The terminal in Quito was modern, but the concrete floors inside were already cracked and a fountain flowing down one tiled wall made it look like a long public urinal. Our plane taxied to a stop inside a big white circle at Lima, and I warned Henry, "Always let someone else cross these white lines first. If they don't get gunned down, then we can cross." Two years earlier, the Chileans had elected the first Marxist president in South America, Salvador Allende, and the usual rundown look of Communist societies was already evident in Santiago. It was a holiday, the Feast of the Assumption, and there was some attempt at levity. After checking into the Sheraton Hotel, we walked through downtown Santiago to a restaurant. I saw two street dancers and a carnival, but the street lights were dim, the shops were barren, and few people were about.

We left Santiago at 7 AM the next morning and flew over several smoking volcanoes along the Andean chain on our flight to Punta Arenas. Sergio Gonzales of COMAPA and Art Owens of Hydrospace Challenger met us at the airport and took us directly to the *Hero*, the wooden-hulled NSF research vessel

with the diesel engine and red sails that had taken me from Deception Island to Palmer Station in 1971. We dined on centollas (king crabs) that evening at a local restaurant. The next morning, Art took us to the COMAPA warehouse to get outfitted for work on Deception Island. It was slim pickings indeed. Art kept saying, "Let me take 30 seconds to explain…" Some biologists who would be working off the *Hero* were waiting for their equipment to arrive, so we didn't set sail until midnight the next day. Then we spent a day passing through the Straits of Magellan and another day passing between Staten Island and Tierra del Fuego, before entering Drake Passage. The passage was smooth at first, but then became rough, so I mounted the boom attached to the main mast and, as it "bucked" up and down in the waves, I rode the boom and waved my Stetson like a drunken vaquero. We passed Snow Island in the late afternoon and arrived at Deception Island in the early evening of 15 December 1972.

The cook, Bob Rogers, and Jerry, the chief engineer, were the only *Hero* crew remaining from 1970-1971. The new captain was a small, grizzled, crusty old Dutch geezer named Pieter J. Lenie, Master of the *Hero* (*Heromeister*, I called him), who in the years ahead would become an Antarctic legend. He used the sails a lot to get biologists into secluded coves and onto rocky beaches where they could study birds and seals without scaring them with the noise of the diesel engine. Captain Lenie was a hard case. A chronic problem of those days was Zodiacs (rubber rafts powered by outboard motors) that leaked air, and Lenie always tried to keep the ones that didn't leak on the *Hero*. Norm and I had bought two new Zodiacs for our work on Deception Island, but Lenie tried to confiscate one and give us one of his leaky ones. While Norm was supervising unloading our equipment at the Argentine base, Lenie and I took the leaky Zodiac across Port Foster, so I could see how much the ice crater I would be studying had changed in the past year. The Zodiac was limp when we reached the other side. When we returned, Norm showed me a protest letter he had written for Bob Dale, the USARP (United States Antarctic Research Program) representative at Palmer Station on the Antarctic Peninsula, a day's sail from Deception Island.

We stayed at the Argentine base, where the chief scientist was Dr. Viramonte and the cook was a 300 pound jolly giant named Pancho Martinez. There were also an Argentine geologist, Ricardo Sureda, a student, Felipe Rivelli, two Romanian geologist-volcanologists, George Istrate and Ioan Teodoru, and Pancho's assistant, Hugo Spairani. Norm and I decided to let Lenie keep one of our new Zodiacs, so Bob Dale could compare it with the crappy ones Lenie had on the *Hero*. Also, we had to depend on Lenie to deliver Norm's letter to Dale. We were dealing with a cunning pirate who insisted he was "giving" us half of "his" seaworthy Zodiacs, even if we bought both of them with money in our NSF grants. Like Solomon, I suppose Bob Dale could cut the new Zodiacs in two and give Lenie and us two halves, like the two "mothers" who claimed the same baby.

Ice flowing into the crater from the northeast had converted the originally circular crater into an oval, with slumping of the glacier surface occurring along concentric ring faults. On the day after the *Hero* left, we pitched a tent on the beach below the ice crater. We planned to use it for storing our equipment and for shelter, in case bad weather kept us from returning to the Argentine station. Norm and Jim would continue studying the stratigraphy of the north ice wall that Olav Orheim had begun during the 1970-1971 Antarctic Summer, and continue Olav's mass balance studies on the glacier that covered Mount Kirkwood, a high point on the caldera rim across Port Foster. My crew and I carried 34 wooden stakes to the upslope side of the crater, where we would use them to construct our strain network on the ash-covered glacier that was flowing into the crater. We spent the next day surveying the dimensions of the crater and installing a line of stakes from the crater to the caldera rim. To set the four-foot stakes, we first had to chop pits three feet deep in the ice-cemented ash that covered the glacier surface, put a stake in each pit, and bury the bottom half of the stake. One cubic yard of tough, gummy, permafrost had to be chopped out with picks and shovels for each of 34 stakes.

The next day, 19 December 1972, was windy and the water was too choppy to cross Port Foster and work in the ice crater, so we dined on Argentine sheep tongues instead. We had a pleasant surprise

the following morning, when Philippe Cousteau, son of Jacques Cousteau, flew into Port Foster in the helicopter from the *Calypso*. Norm hung all his maps of Deception Island on the wall of the main room in the Argentine base as a display for Jacques. When Jacques didn't arrive, Norm got on the helicopter and went to the *Calypso*. If the mountain will not come to Mohammed, then Mohammed must go to the mountain. After communing with "the mountain" all afternoon, Norm came back to report, "Jacques is just like your father." Henry had spent the day installing targets around the ice crater that could be ground control points for orienting aerial photos taken with the Hasselblad camera, so the *Calypso* helicopter was most welcomed by us. It was Pancho's birthday, so we had a party for him. After guzzling too much booze, Pancho reared up and bellowed, "I am Toro!" Then he charged outside and spilled his guts.

Henry finished installing his ground targets for orienting aerial photos (unrolling white paper towels in a Y pattern pointing to a plastic square in the center) and the rest of us installed more stakes for our strain network over the next two days, while Norm and Jim stayed at the Argentine base because their Zodiac was disabled. We took them to the crater in our Zodiac on the third day, so they could try to locate ash layers on the north ice wall from the 1782 and 1855 eruptions, and then sample them for isotope dating. They roped up and went down into the ice crater, walking bowlegged on crampons and poling ahead with ice axes, looking like two little old men with shaky legs and canes. We added 15 more stakes to our primary strain network from the crater to Bynon Hill, the local high point on the caldera rim, and began surveying in our stakes from the ground targets that Henry had installed. As we worked, the Chilean Naval ship, *Piloto Pardo*, brought supplies to the Argentine base, while its helicopter and the *Calypso* helicopter buzzed the ice crater.

Christmas Eve was just another work day. We put in 16 more stakes and finished installing the primary strain network. Norm and Jim rebuilt the failed motor on their Zodiac and then took it over to the crater to film our activities using their movie camera. Back at the Argentine base, we all joined in a Christmas Eve party. Henry, although Jewish, knew more Christmas carols than the Christians. My girlfriend at Ohio State, Beverly Barr, baked a bunch of Christmas cookies for me, and I passed them around on Christmas day as dessert after our feast of thick Argentine steaks and pork chops. The *Calypso* was anchored just offshore. The Curl brothers and Mike took a Zodiac over for a visit, but only Jim (the oldest) was ushered into the bed chamber of the August Presence, who had been laid up after he injured his leg when the *Calypso* crossed Drake Passage. Mike and Bob were headed off by Mme. Cousteau, who was drunk and whose main function seemed to be keeping curious tourists from bothering her husband. She was already sick of Deception Island. She asked Mike (a civil engineering student) what civil engineers did, and when he said they built roads and bridges, she replied in astonishment, "Here?" The Cousteaus had taken the diving saucer on the *Calypso* down into Port Foster and found a submarine fault grinding near the Chilean base that was destroyed during the 1969 eruption. They filmed the motion and recorded the grinding sound.

The *Hero* arrived on the day after Christmas with Bob Dale aboard. He ordered Lenie to return our new Zodiac and motor to us. Lenie protested, saying he couldn't hear the air leaking out of the leaky Zodiac he left with us. Pancho was standing there with his big butcher knife in his belt. I pulled it out, put the point on the Zodiac, and said to Lenie, "Would you like me to make a leak you can hear, Captain Lenie?" The *Hero* brought a SIPRE ice auger, banana sleds, fuel, aluminum poles and flags, more wooden stakes, crampons, ice axes, a radio, generators, all equipment we should have gotten at the COMAPA warehouse in Punta Arenas. I asked Bob Dale if Art Owens had "taken 30 seconds" to explain why all that stuff was missing. Bob replied, "That man is *weird*!" Bob told me he was on a very tight schedule. He sent a film crew up to the ice crater, and said he had to make courtesy calls to the Russians and Chileans on King George Island, and then rendezvous with the *Piloto Pardo*, which would take him back to Punta Arenas. Even so, he spent four hours wining and dining on the *Calypso*, after which he ordered Lenie to put up the *Hero*'s sails so Cousteau could film it leaving Port Foster under sail to meet

the *Piloto Pardo*.

We needed the SIPRE ice auger to drill holes for our wooden stakes at sites on the glacier not covered by ice-cemented ash permafrost, including stakes in the tunnels we planned to dig in the north ice wall. We installed seven stakes in drilled holes the next day, while Henry surveyed in our primary strain network from his best three ground-control targets for aerial photogrammetric mapping using the Hasselblad camera. The *Calypso* helicopter landed in the crater and took Henry on a photo flight over the crater and the rift produced on Mount Pond during the 1969 eruption, where Norm and Jim were collecting ash samples from the ice walls of the rift for isotope dating. On the following day, we planted the final three stakes on the primary strain network and began measuring the distances between stakes using a steel tape measure 100 meters long. The strain network consisted of three parallel rows of wooden stakes from the ice crater to the foot of Bynon Hill about 500 meters upslope from the crater. The stakes in these rows were at the corners of approximately equilateral triangles, and the center row of stakes was surveyed in from Henry's fixed targets so we would have absolute velocity vectors that gave both horizontal and vertical motions on the ash-covered glacier surface. We also began setting three rows of parallel stakes for a secondary strain network that was aligned about 60 degrees from the primary strain network.

Upon returning to the Argentine base on our Zodiac, we learned that Michel Laval, first mate on the *Calypso*, had been killed early that morning, 28 December 1972. Cousteau had sent him and some others up to the rift on Mount Pond to film an interview with scientists working on Deception Island, with Port Foster and the caldera rim as a dramatic backdrop. The rift, more than the crater, was the big story on Deception Island, because it had led to the dramatic escape of the three Chileans from the Chilean base destroyed in the 1967 eruption, followed by the dramatic rescue of people at the British base by the *Piloto Pardo* during the 1969 eruption, all of which captured the world's news media. Laval had slipped on the icy slope and fell into the tail rotor blades of the helicopter which had landed near the rift. He was lobotomized. Laval was tall, thin, blond, and young (about 25). The American helicopter pilot, Bob McKeegan, was in shock when he flew the body down to the *Calypso*. The *Hero* had returned and Jacques Cousteau had informed Captain Lenie, "We have just lost a man." Norm and Jim had brought their ash and ice samples down to the *Hero* for cold storage, and were making preparations to go to Livingston Island to continue their mass balance studies. That evening, people on the *Hero* partied with people at the Argentine base, leaving a sick feeling in the stomachs of the rest of us.

A funeral service was scheduled for 6 AM the next morning on the *Calypso*, and I stayed on the *Hero* overnight so as not to miss it. Captain Lenie was up at 5 AM. He, the chief engineer (Larry), the radio operator (Al), the bo's'n (Jim Byrne), the three biologists, and I took Zodiacs to the *Calypso*, only to be informed that there was no service scheduled. Some mixture of English, Romanian, Spanish, French, and whiskey had given birth to that rumor the night before. Henry had composed a sympathy letter on Institute of Polar Studies stationery which we all signed, Norm with a felt-tip marker, and I delivered it. Then we left. Jacques Cousteau would personally accompany Laval's body back to Ushuaia on the *Calypso* for the flight back to France. His son, Philippe, and ten of the *Calypso* crew would stay at the abandoned British base to continue their oceanic studies and filming. All the Argentines but Pancho and Hugo (the cook and his helper) boarded the *Hero* for a joyride to Livingston Island. I told Pancho, "los turistas" were leaving. He said they "no tienen cojones" (had no balls) and lounged around the Argentine base day after day, seldom going out to do field work. Henry, Bob, Mike, and I bid farewell to Norm and Jim, and then we returned to the ice crater to continue measuring our primary strain network and adding stakes to our secondary strain network. The wind picked up later that day, and our Zodiac rode the edge of waves back to the Argentine base in record time. As we approached, the *Hero* had returned the Romanian and Argentine "tourists" and had picked up the three biologists, and was departing a stormy Port Foster. Norm and Jim radioed that the storm was also roaring over Livingston Island. I radioed

Palmer Station to rail about the flimsy foul-weather gear that had been issued to us and was manufactured in Taiwan. “It is cheese cloth lightly sprayed with a weak rubber solution,” I roared, “It isn’t waterproof, rips easily, and is foul gear, *not* foul-weather gear!”

The storm continued through the next day, and I told Henry that I was getting my “schadenfreude” contemplating the misery of Norm and Jim in their tent on Livingston Island. I thought of Patton standing among the bodies on the battlefield screaming, “I can’t help it, God damn it! I love it! I just *love* it!” The day after that was New Year’s Eve. We took the Zodiac over to the ice crater and added eleven more stakes to the secondary strain network, while continuing measuring the primary strain network. It was Bob Curl’s birthday, so that evening we had a combined New Year’s party and birthday party. I gave Bob New Year’s Day off as a birthday present (What a nice guy!).

On New Year’s Day, Bob McKeegan flew the *Calypso* helicopter to the Argentine base to invite us to a New Year’s party with the French at the British base. They had cleared the flood of volcanic ash from several rooms in the green plastic addition to the British base, and were able to get the generator and the stove working, so they were living at least as comfortably as we were. Philippe was disgusted at the vandalism he found (forced padlocks, etc.), and he remarked that when they entertained people on the *Calypso*, the worst thefts occurred when their guests were rich. He shared the last bottle of *Belgrade* wine from his brother’s vineyards in France, and talked about filming hippos in Africa and following blue whales in the North Atlantic. Then Louis and Francois played the guitar and harmonica while we all sang along. We left at midnight after a most enjoyable evening.

Henry was given a radio that we could use to contact the *Calypso* and the next day, just as we reached the crater rim to continue our work, Henry got Lars Eric Lindblad on the radio. Lindblad had pioneered tourism to Antarctica, and had a trim ship, the *Lindblad Explorer*, built for just that purpose. The *Lindblad Explorer* had arrived in Port Foster and Lindblad wanted us to come aboard for dinner. The tourists were all waiting for us in the lounge-bar. I introduced my group and gave a 30 minute talk on what we were doing. We were in rags because of our shoddy foul-weather gear, and several of the rich ladies aboard deplored our vagabond attire supplied by the National Science Foundation. We looked particularly bedraggled alongside the Argentines, who were also invited aboard and were wearing their bright new field outfits that had never been stained by a day’s work. Lars thought that Jacques Costeau was “an arrogant Frenchman” and wanted my opinion. I said that I had never talked with the man, but his son, Philippe had countered my toast, “Vive la France!”, on New Year’s Day with his toast, “No! Vive la *planet*!” While the tourists went aboard in Whalers Bay, we explored the ship and then relaxed in the lounge chairs on deck. Henry and I dined with Captain Nilsson and his wife. He told us he wanted to take the *Lindblad Explorer* through the Northwest Passage. We visited with Roger Tory Peterson, the ornithologist and painter of birds. Tiny Keen, a tall Texan, invited us to his cabin and spun yarns about his athletic career at Texas A&M. The *Lindblad Explorer* weighed anchor and left around 4 PM.

We put in two days on the strain networks and finished the second day with a party that the Argentines threw for the *Calypso* people. Pancho and Hugo built an outdoor brick barbecue and we feasted on thick Argentine steaks, the best I have eaten anywhere. I also had a long chat with Philippe.

Jacques had been a naval officer and was away at sea for long periods when Philippe was a boy, but their fleeting time together was “real time” in which Jacques would wake him at night to show him the stars and take him on long walks in the forest. His older brother was an architect in France who wasn’t part of The Undersea World of Jacques Cousteau (when Philippe was killed some years later, his brother took his place in that enterprise). Philippe had a patchwork education. He started as a flier, then took a Hollywood course in film making, and finally studied engineering at MIT. He said MIT students were cultural slobs with no interest in art and music, and its reputation rested on a few men of genius who worked alone. Philippe insisted his father was a genius who had discovered that, by marketing science for

public consumption, he was free of the government regulations that strangled other scientists. He said the French stopped having children because they were just “cannon fodder” in foreign wars. It all began with Napoleon. Philippe married one of the five highest-paid New York fashion models. He attended “discrimination free” French schools with Black Africans, and had concluded they were genetically inferior and couldn’t compete. He was surprised when I told him about IQ tests conducted by the U. S. Army in which urban northern blacks scored higher than rural southern whites. Philippe got argumentative after that so we called a truce and listened to Louis and Francois make music. Juan (who spoke French) did his “El Diablo” routine with my Stetson hat and buckskin jacket, and then confronted Philippe with a long and loud paean to de Gaulle and France. That was enough for Philippe. He said, “La commedia e finita!” The *Calypso* people left shortly thereafter.

We put in the last stakes on the secondary strain network the following day and began digging tunnels in the north ice wall the day after that. The first tunnel was just below the primary strain network where ice flowing parallel to the two networks converged with intense transverse compressive strain that folded the ice stratigraphy into a tight U. We also started digging a second tunnel in the part of the ice wall where I took ice samples of the shear planes during the 1970-1971 Antarctic Summer following the 12 August 1970 eruption that produced the crater.

No Antarctic field season takes place without times of great disappointment, even of wondering if the whole field season will be lost. We had one of those moments on 7 January 1973. It was Sunday and Bob McKeegan brought the *Calypso* helicopter and said he would take me on a photo flight of the crater and of the rift for Norm. I climbed aboard with the Hasselblad camera and was busily taking pictures when I noticed that the photo counter registered 185 shots remaining of 190 on the full roll of film. Henry had already run off photos during his *Calypso* helicopter flight and had run the counter down to 115 photos. Had the film somehow reversed and had I just made 70 double exposures? Not knowing how it was possible mechanically for a camera to rewind film on its own, I continued taking photos but I tried to duplicate them all with photos using my Pentax camera. Upon landing for refueling, I got more Pentax film and took the remaining photos over the rift and the glacier on Mount Kirkwood where Norm was continuing Olav Orheim’s mass balance study. Later, Mike and I went over to the penguin rookery across the caldera rim from the Argentine base and, while I was taking pictures there, I noticed that I hadn’t loaded the film properly. So I had to live with the prospect that the whole photo mission in the *Calypso* helicopter was for nothing. This didn’t ruin the season, as we could still get the essential data we needed from our surface strain networks and tunnels, but all the photogrammetric mapping we hoped to do using metric photos from the Hasselblad camera may not be possible, and I didn’t even know how many of my Pentax shots produced photographs. We wouldn’t know until we developed the film back in Ohio.

If that weren’t enough, the *Hero* arrived that day and Captain Lenie told us he had to return to Palmer Station all the 2 by 4 lumber we were sawing lengthwise to make more 2 by 2 stakes for our strain networks, and all of the aluminum poles that he had brought us just a few days earlier. He did not bring more mogas (fuel for our Zodiacs), a generator to replace our faulty one, or the new foul weather clothes to replace the rags we were wearing, all of which I had requested by radio. He came only to take, not to give. The next day, the *Hero* left to move Norm and Jim to another site on Livingston Island and the *Calypso* returned to rejoin the people Cousteau had left at the British base. We returned to the ice crater, where Henry and Mike moved “like moles” in the first ice tunnel and Bob and I had to break through a crevasse filled with ice-cemented ash in our tunnel. We advanced the tunnel only a few feet after a day of chopping.

Things looked up the following day. Bob and I tunneled 15 feet into the ice wall and intersected a shear plane in the ice just beyond the crevasse filled with ash permafrost. The shear band in the shear plane was just an inch or two wide, but it had caused a nearly vertical shear displacement of two feet, as recorded by the offset of sub-horizontal debris layers in the ice, and the upper part of the shear plane had

opened into a ring-fault crevasse on the glacier surface. I decided to sink a vertical shaft parallel to the shear band and see if the shear offset of debris layers decreased with depth, as they should if the shear was being caused by forward bending of the ice wall toward the crater, like the shear between pages of a book that is bent about its binding. We went down about five feet and found a second shear band with even more shear offset about six feet beyond the first shear band. It also opened into a surface crevasse above our tunnel. We decided to follow them both down. I took photos and measured strikes and dips as we went down, because the shear bands should curve if they were produced by bending shear that decreased to zero at the frozen bed of the glacier. Things were even more interesting in the first tunnel. Henry and Mike found some shear bands that were sub-horizontal near the tunnel entrance. But deformation changed abruptly as they got in farther and made a right-angle turn to the right to get into the ice that had been folded into a gigantic U by transverse compressive flow along our primary and secondary strain networks, which were at an angle of about 60 degrees to each other. They encountered the same nearly vertical shear bands that we had observed in our tunnel. Shear offsets could still be measured because the debris layers in the U fold, while also almost vertical, intersected the shear planes at about 90 degrees because the folded debris planes were radial to the crater, whereas the shear planes were circumferential to the crater, as expressed by the concentric ring faults on the upslope side of the crater. However, the nearly vertical shear bands began to crisscross the closer they got to the axis of the U fold. It was a very complex state of stress. Later that day, the *Hero* returned with the mogas and foul-weather gear we had requested and Larry, the chief engineer, had managed to get our generator running.

I cut an empty 55-gallon drum in half and rigged it with a rope sling the next morning, so Bob and I could use it to haul up ice chips from the bottom of the vertical shaft we were sinking in the second ice tunnel, and we spent the rest of the day breaking our butts doing that. Henry and Mike were also encountering tough going in the first tunnel, as they had to chop through close-spaced vertical layers of ice-cemented ash in the U fold that was exposed on the crater wall. The *Hero* left at 6 AM, but the *Calypso* was still in Port Foster doing underwater studies and photography using the diving saucer. The Argentine ship, *Bahia Aguirre*, arrived and dropped off Dr. Igarzabal, a geomorphologist from the University of Salta. He was the new boss of the Argentines and he inspired them to get off their duffs and do some work in the days that followed, mainly by setting an example for them.

The *Calypso* left the next morning. Bob and I encountered a water-filled crevasse at the bottom of our vertical shaft, after we had gone down over l5 feet. That ended our digging, and the permafrost layers were proving to be a hopeless barrier to Henry and Mike in their tunnel. We all took strikes and dips of the shear bands and debris layers, and measured shear offsets, in our tunnels and called it a day. I was impressed by how hard Bob worked. He was a sturdy young fellow. When we returned the following day, water was still in the crevasse so Bob and I completed taking strikes and dips, and measuring shear offsets of debris layers, for the two major shear bands we had been following down the vertical shaft. We confirmed that the shear bands did indeed bend toward the crater and shear offset did indeed decrease with depth, as would be required by the bending shear mechanism active at the ice wall of a glacier that was frozen to its bed. Shear offset was greatest at the base of the ring-fault crevasses, which were caused by shear rupture across the nearly vertical shear planes. We went over to the first tunnel and helped Henry and Mike install strain rosettes on the tunnel walls. They had chopped out about thirty feet of tunneling, ten feet into the wall and another twenty feet to the right into the U fold. We installed strain rosettes in about three-foot squares of ice by using ice screws, and then measuring the changes in angles and distances between screws over time. Then we installed large strain rosettes for the whole tunnel walls, top, bottom, and sides, by drilling holes three feet deep into the ice, using the SIPRE ice auger, and then freezing four-foot wooden stakes into the backs of the holes, so we could measure bulk strain rates that were less affected by ice deformation caused by the tunnel itself. At least that was our hope.

The next day was stormy, so we didn’t work. The Chilean ship, *Yelcho*, arrived and anchored in

Pendulum Cove, just offshore from the Chilean base that was destroyed by the 1967 and 1969 eruptions. On the following morning, we heard over the radio that the *Hero* was making an unscheduled trip to Ushuaia, and that would add ten days to our stay on Deception Island. When I told my crew that we probably wouldn't leave before February 10th, almost a month away, Mike and Bob went bullshit. Bob said he would load a 55-gallon drum of mogas in the Zodiac and head for South America alone if he had to. I reminded him of his "Please take me to Deception Island. I'll work for nothing," speech in Columbus. Both he and Mike were textbook cases of the Bull-Nye Syndrome, and I *loved* it. There is no cure except escape and the only treatment that alleviates the symptoms is work. We returned to the ice crater, finished installing the strain networks in the first tunnel, and began chopping out a third tunnel on the north ice wall to the right of the U fold. After tunneling 16 feet into the ice wall, we cut the end of the third tunnel into a spherical chamber. Then we installed strain rosettes along three mutually perpendicular axes on both the ice wall using ice screws, and in ice three feet behind the ice walls by drilling holes with the SIPRE ice auger and freezing in wooden stakes at the ends of the holes, as we had done in the first tunnel. The idea was to measure all the strain rates in and beyond the spherical chamber, in the hope of separating regional deformation from local deformation caused by the chamber itself. That hadn't been done before, so I didn't know if it would work.

We worked installing and measuring strain networks in the first and third tunnels all the next day. The *Yelcho* returned and anchored offshore of the destroyed Chilean base, not far from our crater, and HMS *Endurance* arrived and anchored near the Argentine base. The helicopter on the *Endurance* flew over our crater and landed at the abandoned British base near Whalers Bay. Mike told me that night he would "work sixteen hours a day and sleep in the tent" on the beach below the crater in order to finish and leave with the Argentines on January 24th, nine days away. As soon as they stop working, Bull-Nye takes over.

The *Lindblad Explorer* returned the next day and anchored in Pendulum Cove. We and the Argentines were invited aboard, and there were no speeches or applause, just good food, good talk, and a good time. Our new foul-weather clothing was still intact, so we weren't in rags this time. We wanted to bring one of the four bottles of scotch that Bob Dale had left with us, but Norm had taken two to Livingston Island and hidden the third. The fourth was already empty. Being a teetotaler, I didn't care, but our party for the *Calypso* people on 4 January 1973 could have used one or two, instead of the Argentines providing all the booze. We continued installing and measuring our strain networks in the first and third tunnels during the next two days, Henry took stereo photos of the crater from stakes at sites on the south crater rim that we would occupy for repeat stereo photos when we returned a year later to re-measure all of our strain networks that survived. I began chopping out a fourth tunnel near the base of the ice wall below the secondary strain network.

Disaster struck the next day. The *Hero* brought Norm and Jim back from Livingston Island at 5:15 AM and then departed for Palmer station. My crew returned to continue setting and measuring strain networks in the first and third tunnels, and extended the fourth tunnel ten feet into the ice wall. We drilled holes in front of all four tunnels and put in marker stakes that could be surveyed in from the sites across the crater where Henry took his stereo photos the day before. We were in the tunnels all day, so we didn't notice the sky darkening as a terrific storm approached Deception Island. Its full fury struck by the time we quit and came out of the tunnels. Even then, we were somewhat sheltered by being inside the crater, but as soon as we climbed to the crater rim, the wind knocked us flat on the ground and we had to crawl on our hands and knees down to the beach to our survival tent and to the post where we had tied the rope to our Zodiac, which was some 30 yards away when we beached it at low tide. Now it was soaring high in the air overhead, swooping and diving like a kite at the end of our rope. Between gusts of wind, it came crashing down onto the beach, flopping over and over like a pancake on a griddle, before soaring aloft again with the next gust of wind. All the air pockets were collapsed, and the outboard motors had been

ripped free from the aft wooden transom and were gone. Bob and Mike had preceded Henry and me, and they were huddled in the survival tent, which we had wisely tied down with about a dozen heavy ropes anchored to wooden posts we had planted deep in the beach sand. They came out to help us haul in the Zodiac, which was flying at the end of the hundred-foot length of rope tied to the anchor post on the beach. After we snugged the collapsed Zodiac against the anchor post, we all went inside the survival tent to wait out the storm. By 9:l5 PM, Bob and I decided to walk back to the Argentine base. Henry and Mike followed around 12:30 PM. The walk took almost three hours (one hour on a calm day). Juan and Jorge received us like long-lost friends when we finally arrived at the Argentine base.

Henry and I returned to the ice crater the next morning in our second Zodiac, finished measurements in the four ice tunnels, and towed the collapsed Zodiac and two outboard motors back to the Argentine base. We couldn't repair one big rip in the Zodiac. It was a beautiful calm day after the storm and that evening Pancho cooked superb Argentine steaks for us on his outdoor grill. Norm and Jim went to Olav's glacier on Mount Kirkwood to drill holes with the ice auger for stratigraphic studies, and our crew returned to the ice crater. Henry surveyed in the positions of the stakes we had planted at the entrances to our four ice tunnels, and the rest of us continued measuring our various strain networks. We all did more of the same the next day, with just one Zodiac to get each party to its work sites. That night there was a roaring drinking party at the Argentine base that lasted until 3 AM. By then Igarzabal wasn't the fireball he was when he arrived two weeks earlier and, when he complained that he couldn't sleep because of the festivities, Jorge told him, "If you worked during the day, you would sleep at night." As dawn approached, the Curl brothers and the Romanians were doing the Zorba the Greek dance on the beach in their underwear. Pancho snored through it all, because he worked during the day.

The Curls were out cold, so Norm took Henry, Mike, and me to the ice crater. Henry took another set of stereo photos and finished his surveying, while the rest of us measured strain networks. The *Bahia Aguirre* arrived the next morning, 24 January 1973, to evacuate the Argentines and Romanians. Igarzabal authorized us to close the base. Jim accompanied us to the ice crater with his movie camera, as he was making a film of our field season for the Institute of Polar Studies. We hammed it up for the camera, and faked falling into the crater to get some action into the movie. There was a real accident in the second tunnel, when the board over the vertical shaft broke with Jim and me standing on it. We fell some ten feet to the shaft floor, but we weren't hurt. We cut some ice samples from the tunnel walls and returned to the Argentine base, which was empty, but the *Bahia Aguirre* was still at anchor offshore. By morning it was gone. We stayed at the base because it was too windy to work at the crater. When we radioed Palmer Station, we learned that the *Hero* was going to stay at Ushuaia for an additional five days because NSF wanted its arrival to be marked by a window-dressing ceremony that couldn't take place until February 5th. Once again, my crew went bullshit, and Bull-Nye reigned supreme.

I packed my ice samples the next day, as it was still too windy to work in the crater. In any case, there was nothing left to do but re-measure strain networks that had already been measured repeatedly. We began packing some of our gear and boxing specimens we had collected. The *Bahia Aguirre* entered Port Foster and left, with nobody coming ashore. That evening, we learned by radio that the *Hero* was coming to evacuate us the next day, three weeks sooner than I had been led to believe. I was counting on at least two weeks so we could measure the strain networks in the tunnels over a timespan long enough to get strain rates well above the errors in our measurements. Norm blockaded the doors at the Argentine base to keep Captain Lenie out, but my crew would mutiny if I tried to keep Lenie at bay for two or three more weeks. The Bull-Nye Syndrome would trump everything, once Lenie was there handing out free tickets to South America, leaving as soon as we boarded. The next morning we loaded our gear on the *Hero* and left Deception Island. Lenie wanted a letter in triplicate explaining how one of our new Zodiacs got the long tear in the seam next to the transom. The Japanese ship, *Yamato*, was in Whalers Bay as we sailed out of Port Foster through Neptune's Bellows. Then we all got seasick on the rough water outside.

Ed Hemmingsen's group of five biologists from Palmer Station were aboard. He was also fed up with the low level of NSF support, and he was a veteran scientist with many seasons in Antarctica. Crossing Drake Passage was uneventful and took three days, but we were a surly bunch when we approached Cape Horn. Henry snarled when I asked if I could look at a magazine he was reading. When I said, "Don't give me a snarl, give me a yes or no," he threw it in my face. Then he tried to snatch it away when I was reading it, and I threw it in his face. So it went. Was it Bull-Nye? If so, why? After all, we were on our way home.

Our spirits lifted as we passed the gloomy outline of Cape Horn and entered Beagle Channel. The scenery in the channel was spectacular. Virgin forests ran up snowy peaks, and the sun shone down the fjords. An Argentine plane and a Chilean gunboat passed by. Both countries claim the channel islands. At 6 PM we anchored near a settlement on the Argentine side of the channel, opposite Puerto Williams, a Chilean naval base and the most southerly human outpost north of Antarctica. The *Yamato* steamed by, bound for Ushuaia. We followed the *Yamato* the next morning, continuing through the majestic fjordland scenery of Beagle Channel and arrived at Ushuaia just before noon. We were five days early, so no reservations had been made to fly us on to Buenos Aires. Norm and I strolled through town, while Henry, Mike, and the Curls went to the hotel, where the Curls bellied up to the bar. Bob was so drunk that when he tried to board the *Hero* he fell between the ship and the dock. Mike and Jim fished him out. Bob Rogers, the cook on the *Hero*, was bitching because none of the whores in town would service him.

Visiting John Mercer and Fitz Roy in Patagonia

Henry and I decided to fly to Rio Gallegos on a standby basis, rather than wait for our scheduled flight on February 6th, four days later. We flew out of Ushuaia at 3 PM, passing over the Andes and onto the pampas of Tierra del Fuego. Our plane had a brief landing at Rio Grande, a small square-gridded town, and flew over oil fields with flares of burning natural gas dotting the barren flatlands below, making Tierra del Fuego truly the Land of Fire. Many roads to and from nowhere crisscrossed the land. After we crossed the Straits of Magellan, I saw the region of small volcanic cones to the west that I had seen two years earlier. When we landed in Rio Gallegos, Henry was able to get a connecting flight to Buenos Aires, but I wanted to see Fitz Roy, near the Argentina-Chile border in southern Patagonia. John Mercer was conducting his glacial geological studies in Patagonia at the time. At the Institute of Polar Studies, John had shown slides of Fitz Roy during a seminar presentation of his fieldwork, and from that day I had vowed that I must see it too. Fitz Roy was a mountain with three lofty summits, the central one being 11,078 feet high. It rose almost vertically from the plane of the Rio de las Vueltas. Glaciers curved around both ends at its base. FitzRoy was the captain of the *Beagle*, the ship that took Darwin on his cruises to the Galapagos Islands, where he made the observations that led to his theory on the evolution of species by natural selection. I had heard somewhere that FitzRoy, an evangelical Christian, was despondent after Darwin published *Origin of Species*, as evolution seemed to leave no place for God's hand in creation, and FitzRoy regretted making Darwin's discoveries possible. He committed suicide. The full title was *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, making it a racist tract. It fit well with White Supremacy thinking in London when the British Empire encircled the globe.

There were no regular busses to Fitzroy. I checked into the Commercio Hotel and the next morning I checked out and toured Rio Gallegos. A few fishing boats were on the river, but most impressive were the 60 wagon trains (18 tons per wagon) that brought coal from Andean mines at Turbio twice a day for shipment to Buenos Aires. There was a Silesian college and a nice park dedicated to San Martin. British sheep herders in Patagonia had established a British Club, which was a tavern where people could throw darts and play billiards. John Mercer was English, so I thought he would show up at the British Club eventually. I went there and waited. Sure enough, he came in about 5:30 PM with Walter Sander, a German-born geologist for the *Agua y Energia* in Buenos Aires. Their rented jeep got a flat tire on the way in from Turbio. I offered to buy them a new one, plus a spare, if they would take me to Fitz

Roy. They were planning to work in that area anyway, so they agreed. Off we went on the road to Punta Arenas, stopping long enough to inspect the volcanic cones I had seen from the air. We camped alongside the Rio Chico, on the road to Estancia Markatch Aike. Another tire was flat the next morning.

We forded the Rio Chico and crossed a lava rampart to a sheepman's ranch. Ranches are called estancias in Patagonia. We arrived during shearing. Chilean shearers, often with Indian features, go from estancia to estancia and do the dirty work. Newly sheared sheep were dipped in a tank of sheep dip and then let out, while drovers herded in unsheared sheep. Eight shearers were working, three others twisted the wool, and wool was baled in a lever-operated press with three men on the lever. The estancia was large, with four main clusters of buildings, a corral for maybe 20 horses, and a big house built of basaltic stone cut from the lava rampart. A garden was surrounded by trees to protect it from the legendary Patagonian winds, and all the buildings were between the river and the lee side of the lava rampart. John and I climbed the rampart, where John had found glacial till under lava he dated at 120,000 years old. John said the till had been deposited by the most extensive Patagonian glaciation. We climbed an older volcanic cone, around which the lava had flowed, so John could get a sample for K Ar (Potassium-Argon) dating. I took a picture of John leaning into the wind at a 45-degree angle on the crater rim. Inside the crater, a dried lake was surrounded by bleached animal bones, and John took a picture of me sitting with a switch on a horse skeleton, "beating a dead horse."

We returned to the estancia when we saw a pickup returning with Walter and the flat tire. When it was repaired, the driver took Walter and me back to our campsite by the river. Then the new owner appeared, toting a rifle, and asked us to state our business. Walter was able to satisfy him that we were harmless. John returned after he collected his lava samples from the volcanic cone. That evening, Walter told me that he and ten other Germans were operating a weather station at Little Koldewey on the East Greenland coast during World War II. The US Coast Guard cutter-icebreaker, *Eastwind*, armed with a bow cannon, landed 400 troops to capture them and their dog in 1944. It was the only Coast Guard military action in the war. The incident was reported in the book, *Ice is Where You Find It*, and was covered in the October 1949 issue of *National Geographic Magazine*, which featured a photograph of them being marched down to the beach with their arms aloft above the caption, "Hitler's henchmen come out in conga line." Walter was in an American POW camp until 1948, when he returned to the French zone of occupied Austria. The French wanted to send him to Vietnam, so he came to Argentina after seeing an advertisement to attract immigrants put out by the Peron Government. Juan Peron was back in power as Walter spoke. Walter told me that Argentines use their brains to avoid work, and mentioned one who was pleased with his five playboy sons and disappointed with the one who worked. He said the Argentine part of Hell was only lukewarm because the Argentine foreman only came in to punch the clock, so the firemen didn't keep the furnaces stoked.

The next morning, we returned to Rio Gallegos to get the two tires I had offered to buy. There we met Alberto Helmlich, the sheep rancher who owned the jeep we rented. His wife left him to return to Germany. He said John was honest but in general he didn't like Brits, saying, "They talk fair play, but act for themselves." He liked the Irish. "They will be free," he said, "religion is not the problem." During the 12 AM to 2 PM siesta, I wandered into a magazine shop and overheard some Texas oilmen bitching about prices. After the siesta, I bought an air mattress, we got the jeep overhauled, and had a three-course meal of sheep soup, sheep casserole, and sheep steaks at the hotel. Then we drove to Estancia Tranquilo, the 200 square-kilometer sheep ranch owned by Alberto. We took the Calafate road through the pampa alta (the high prairie), which looked like South Dakota, but for clouds shaped like flying saucers. Fluffy cumulus clouds often drift across the Dakota prairie. When they seemed to be stacked, we would call it a Tall Sky. We spent the night at Esperanza, and then continued on the Calafate road to Condor Cliff, a basaltic plateau where we stopped so John could look for the USARP sunglasses he lost there. Then we drove onto a flat barge that ferried us across the river that cut through Condor Cliff. The ferry was guided

by a winch-operated rope, and we all took turns cranking the handle. The jeep overheated as we drove up out of the valley on the other side, so we spent a few hours climbing around on Condor Cliff while the engine cooled. Our next stop was Estancia Bi-Aike. The French owner and his wife invited us in for tea, cakes, toast and jam. She made the jam from currant and gooseberry bushes growing outside. Her sister was visiting with their grandson. The house was like a rabbit warren, but homey. Toward the end of the day, we arrived at Estancia Tranquilo, where we ate supper in the foreman's house and slept in Alberto's old house (he was building a new one). The foreman, Carcamo, was Chilean and his wife had Indian blood. They had two boys, a girl, cats and dogs, and a flower-and-vegetable garden. I mused, "Which is better, a plain peasant wife who grows you children and flowers and keeps your house, or a beautiful educated wife who grows you nothing and lives in Germany."

We stayed there the next day, which was rainy, and John told me how bitter he was when Emanuel Rudolf, the new director of the Institute for Polar Studies, had asked him to leave. John Mercer was and still is a legendary glacial geologist. He was in Antarctica only once or twice, but in that time he realized that the West Antarctic Ice Sheet was inherently unstable, and had been both larger and smaller in the past. He postulated a similar marine ice sheet that was grounded on parts of the Eurasian Arctic continental shelf during Pleistocene glacial maxima, parts of which have now been documented to have existed, and he learned from his Patagonian work that the glaciations had been synchronous across the Equator in middle latitudes, which would not be expected from the out-of-phase minima of solar radiation in those latitudes. John was a tall, rangy fellow, 51 or 52 years old, with thinning reddish hair, a weathered freckled face, and a dry sense of humor. He had refused opportunities to teach glacial geology in the many years when he was at The Ohio State University. I never understood that, given his intuitive genius and superb field expertise.

We left for Fitz Roy around noon on 8 February 1973, crossing Rio Santa Cruz and Rio La Leona by ferry and stopping at Punta del Lago Viedma for coffee and lunch. The Punta was mostly just a hotel and store run by an old German woman and her son, who were very poor. But Fitz Roy was visible across Lago Viedma from Punta, so I thought it could be an important tourist stop someday. We continued on rain-softened roads to the bridge over Rio de las Vueltas. The south approach to the bridge had been washed out. A few steel I-beams had been placed across the gap, and they sagged as if cars had driven over them, but John didn't want to take that chance with his rented jeep. We camped near the bridge. The clouds cleared over Fitz Roy toward evening, revealing those majestic peaks. To the left and behind Fitz Roy were three vertical spires of rock, the highest of which was called Torre (Tower). I called the group Tres Amigos. Very few rock climbers had reached the summits of Fitz Roy and Torre. The climb would be up smooth sheer dolomite rock, ice clad near the summit, and buffeted by horrendous unpredictable winds.

I hiked alone into Fitz Roy the next morning, while John and Walter went east to look for glacial moraines on a high basalt plateau. As I neared an estancia two kilometers from the road, which was just tire tracks, I saw that the best view of Fitz Roy and Torre was from a high domed hill to the west. After getting permission at the estancia house, I began climbing the hill. The view improved as I entered a grassy meadow around a marshy lagoon, but I lost it when I had to follow the crest of the hill and turn left to avoid a series of deep ravines. Then I entered and passed through a virgin forest, broken by marshlands where skeletal dead trees rose like zombies and eagles wheeled overhead, to alight in their white branches. Climbing onward, I came to the edge of the forest where high winds had bent the tree trunks from their base into a permanent J-shape. Then I entered an upland meadow which gradually gave way to a broad slope of shattered, windblown slivers of rock. I walked to the left and looked down the Rio Tunel valley. Walking to the right, I saw the snout of Torre Glacier, and the lake between it and a curved terminal moraine, where the lake drained through a V-shaped cut to become Rio Fitz Roy. The wind was fierce and blew the rock chips about like buckshot from both sides of the domed summit of the hill. I

waited at the top of a gulley and then took my pack to a large boulder and waited behind it to watch the smaller shards skip across the slope. One shard curved around my rock, hovered in the air at my feet, and then zipped away. Torre and the other peaks were in swirling clouds. Leaving my pack at the boulder, I climbed the dome of the hill. A crumbling rocky cliff some meters high fringed its summit, but I found an easy way up and made my way to a curious pole tied with guy-wires to a rock cairn on the summit. I wondered if it marked the border between Argentina and Chile. The view in all directions was spectacular. To the west was another valley where a glacier peeked around a corner. To the northwest were the twin arms of Torre Glacier between Torre and Fitz Roy, and the Rio de las Vueltas cut a deep gorge to the east. I photographed it all, waiting for the best lighting and for the swirling clouds to partly clear around Torre and Fitz Roy. Then I recovered my pack and descended the hill's north slope into the valley of Rio Fitz Roy. John had loaned me his tent, which I pitched near the river as twilight faded.

I broke camp after taking more photos of Torre, sparkling against a blue sky in the morning clouds, and I headed down Rio Fitz Roy. After a mile, it entered a narrow gorge, and I had to climb up over the rocks, where I found a faded path that I more or less followed over the gorge. On the other side, I dropped my pack and walked back along the river, looking for the footbridge John said was there. After a mile, I realized that no bridge crossed the vertical walls over the torrent far below. John said a French alpinist had drowned in the gorge. I could see why. The river continuously roared under, over, and around huge boulders. I regained my pack and followed the trail out of the gorge to a campground where Rio Fitz Roy joined Rio de las Vueltas. Two cars were parked there. They must have been driven over the I-beams onto the bridge across the Rio de las Vueltas. The park ranger mapped the path to Fitz Roy Glacier for me. I left my pack in his cabin and began my trek about 2:30 PM on sore feet. Following the path up around the right wall of the Rio de las Vueltas gorge, I came upon a magnificent view of Fitz Roy. Below to my right, a glacier-fed river roared through its own gorge into the Rio de las Vueltas. Beyond the river was a high hill that I had seen the day before, and knew would give me the best view of Fitz Roy Glacier. I crossed the river and climbed the hill. High up on the slope I suddenly realized I was in an old glacier bed. The rock was grooved to a depth of 6 to 30 inches, with joints running normal to the grooves, similar to the giant glacial grooves on Kelley's Island in Sandusky Bay on Lake Erie. Farther up, the glacier bed narrowed and I could see by the grooved walls that the ice there had not been more than 30 feet thick. The slope was about ten degrees. Continuing my climb, I crossed the broad summit. It was covered with gravel piles of rough stones. This was an old accumulation basin. The former glacier had been only a couple of miles long and from 100 to 300 yards wide.

I walked to the left edge of the summit and looked across at Fitz Roy Glacier. Below was its magnificent high terminal moraine, enclosing a lake that drained into a swift north-flowing river. I made my way down the steep slope and through the forest to the river bank, and found the tourist path along the river, which I then followed. The river began at the hanging glacier in front of Fitz Roy. It divided and I had earlier crossed the south branch, so I had to ford it again to keep on the trail back to the campground. After crossing, I had to traverse a marshland around a lake. The sun was setting behind Fitz Roy. It was a magnificent sight, which I photographed. When I climbed up out of the marsh, I followed the trail for maybe a mile until I lost it near a high, clear lake. After stumbling around in the dark, I decided to wait until dawn. I covered myself with dead tree bark and shivered for about seven hours.

As soon as I could see color in the sky, I looked again for the trail and found one along a sheep fence. I followed it and after a mile it led to the trail I had taken the day before, so I took that trail back to the campground, reclaimed my pack, and started the twelve mile trek back to the bridge over the Rio de las Vueltas. One vehicle passed me on the way to Estancia San Jose, but it was full. I limped across the bridge at 11:40 AM and found our campsite deserted. John and Walter returned within an hour, and we drove back to Estancia Tranquilo with only a coffee stop at Punta del Lago Viedma. We ate supper at the Carcamo house, and then turned in. After I showered and laundered my clothes, we left Estancia

Tranquilo just before noon on the road to Calafate. We made a ferry crossing where a new bridge was being built. Calafate was a resort area on Lago Viedma. We went to the intendente's office and learned that boats would cross the lake for Estancia Christina on Thursday and Sunday. I wanted to see the glacial grooves where Moreno Glacier had crossed the lake. John drew a map showing me how to get there, and then he and Walter left. I checked into the hotel, sharing a room with John Pitt, aged 61, who had driven from his farm in Quebec in a German BMW. He called his farm Pitcairn, after the island occupied by the *Bounty* mutineers.

John Pitt and I took a tourist bus to Moreno Glacier the next morning, and teamed up with a little Welshman named John Pugh. The terminus of Moreno Glacier had advanced over a ridge of rock, creating an ice tunnel in the lee of the ridge that we could enter. For the first time, I could observe how a melting glacier sole erodes bedrock. The ice was free of debris except for bits of rock it had eroded from the ridge. The bedrock ridge was fastened to the debris-free glacial ice only by the surface tension of the water film on the ice. The surface of Moreno Glacier was all splintered like a surging glacier, and a water corridor between vertical ice walls divided the glacier grounded on our side of Lago Argentino from the main glacier that came out of the Andes and had crossed the lake. When the glacier reached our side the year before, it created a large ice-dammed lake that kept rising until a calving bay carved out the corridor and sent a wall of water down the valley as the lake drained. Three bridges were taken out on the road to Calafate, and were being rebuilt while we were there. Moreno Glacier was in the process of closing the ice corridor, setting the stage for another flood.

Back at the hotel, I waited another day for the Sunday boat to take me to Estancia Christina. It arrived at the boat dock on my birthday, 15 February 1973, and I boarded at 8:30 AM for the cruise past Upsala Glacier on the way to Estancia Christina. The wind whipped up huge waves, making everyone seasick, so we turned back within sight of Upsala Glacier. I got a ride back to Calafate in the back of a pickup that took a girl who fainted on the boat to the hospital. I prayed in the little Catholic church in Calafate, the first church I had entered since Santiago. Then I went to the airport and flew across the barren windswept wasteland of southern Patagonia to Rio Gallegos. There, I went to the Transportadora Patagonica bus station and bought a ticket to Comodoro Rivadavia. It was an oil town, and I discovered on the beach that the ocean was polluted by oil spills. I attached myself to three Brazilians and two Americans at the Club Deportivo Portugues, which was managed by a Pole. We stayed there until the Sunday bus arrived to take us to Bariloche, a popular resort on a lake at the eastern edge of the Andes in northern Patagonia. While we waited, some of us climbed the cliff behind Comodoro Rivadavia and got a magnificent view of the town and bay. The slum section of tin and concrete shacks covered the hill above the cliff, giving the slum dwellers a million-dollar view that the wealthy people below didn't have. The town wrapped around the hill on three sides, and a giant cross on a steel tower marked the hilltop. The hill was 500 feet above the sea, but was composed of shells, smooth beach stones, and sand. The slim kids looked healthy and happy. They followed us around and one husky Indian lad beat two of us handily at table soccer.

I attended early Mass in the basement of the cathedral that was being built in the middle of the town. Mass was well attended, but mostly by women, which is the custom in Latin America. Our hotel manager took us all to a broad, clean beach south of town, where we swam and picnicked with many others. I noticed what each age group talked about. Boys talked about cars, young men about girls, middle-aged men about money, and old men about their youth. On our return, we passed through a seaside resort, Rada Tilly, to observe the indolent ease of the idle rich. They lived in modern little villas along the beach, with plastic palm trees waving in the breeze. Our bus left Comodoro Rivadavia at 8:30 PM and headed into a beautiful sunset on the road to Bariloche. As dawn broke, we were passing through rolling sheep country and I saw how destructive sheep are to the range. The originally short grass was gone and had been replaced by tough low bushes. Beyond the town of Esquel, the road turned north and

entered the fore-range of the Andes. Tree-covered slopes and an occasional snowy peak reminded me of the Rockies. Poplar trees formed windbreaks around estancias, as always. The mountain valleys had been glaciated, and till or glacial outwash were exposed in all the road cuts. Our bus climbed along a series of hairpin turns, in a spectacular but dusty drive. We arrived in Bariloche that afternoon. The architecture had a strong German influence, and the Selva Negra near town was named after the Schwartzwald (Black Forest) in Germany. There was a Catholic hospital and a Catholic college, named after St. John Bosco, the patron saint of Patagonia. I ate a large pizza and got lodging for ten pesos in a dormitory-type room at the edge of town.

The next day, I walked into the town square, which was modeled after a medieval German village. There, I bought a bus ticket to Buenos Aires, sampled the famous Bariloche chocolate (500 grams of rum-and-cognac chocolate for 80 cents), and visited the Museum of Patagonia. It included paintings of several Irish generals; O'Gorman, O'Connor, Day, and others who served in Spanish armies. A California girl joined me on the bus to Buenos Aires. We followed a river valley through a spectacularly eroded canyon of tall spires and ramparts which eventually opened onto a broad arid plain. The river water in the canyon was a most amazingly clear purple-blue, and meandered around tiny wooded islands and grassy meadows on the canyon floor. It was a grand place for boys to play pirates, Indians, and outlaws. The river was dammed on the treeless plain, creating a vast lake in a semi-desert. Our bus had several flat tires on the way, and we arrived four hours late in Buenos Aires I got lodging at the Stella Maris Seamen's Club with papers issued to me on the *Hero*. A woman there told me that the mechanic on the *Hero* got fired, and she had to get him drunk and bawling onto a plane to the States. She told him, "Ask God for help." He said he did and He didn't, so she said, "Ask again." Stella Maris was run by a Catholic priest, assisted by an aging tow-headed Irishman who had lived in Argentina for over 20 years. I asked him if he ever went back to Ireland and he said, "Nary a toe in that direction."

From Iguazu Falls to Machu Picchu

I wanted to see Iguazu Falls, one of the great cataracts of the world, and Machu Picchu, the lost city of the Incas in the Peruvian Andes. Iguazu Falls was on the Argentine-Brazilian border and I needed to get my visa stamped at Immigration. The *Bahia Aguirre* and the square-rigged sailing ship used to train Argentine naval cadets were anchored in the Rio de la Plata. My bag was at the Chevalier Terminal for the Bariloche busses. I took a city bus to pick up my bag, but missed the street so I had to stay on the bus until it returned. It went some 20 miles outside of the city, first passing apartment buildings that reminded me of ones in Russia and surrounded the city, then through an outer ring of small suburban homes made of concrete and tile with small lawns and a car garage that reminded me of American working class homes, and finally to open countryside and rural towns, before returning to the city. That shot the day. The next morning, I went to the Import and Export Patagonian office and heard a funny story from a Swedish lady in charge there. The *Hero* had arrived on February 5th or 6th. Ed Hemmingsen, the senior biologist aboard, learned that he had to wait a day before flying to Miami. Ed was in the grip of Bull-Nye, so any delay was intolerable. He threw his documents on the floor and began screaming and shouting at her. She bawled him out in Norwegian, his native tongue, and nobody would ride with him to the hotel where they spent the night.

A bus to Iguazu Falls was leaving at noon and I was on it. The main obstacle was the Parana River, the second longest in South America. The bus had to be ferried across, but using an island in the river shortened the distance. Rain fell most of the day and flooded low stretches of the road in the flooded flatlands. Gauchos herded cattle alongside the road from time to time, and lightning continued to flash in the heavens that evening even when the rain let up. We ate supper in a quaint old town with narrow stone-paved streets and high-ceilinged buildings of stuccoed brick. The next day couldn't have been more different. Prairie fires burned out of control along our route, perhaps started by the night lightning. We entered hilly country in the late afternoon, and banana trees and coconut palms began to appear. As the

sky darkened, we left the paved road and followed a dirt road on red earth through the hilly forest. Our bus arrived in Port Iguazu after dark, and we stayed at La Cabana Hotel, where South American foresters were holding a convention. The hotel was run by a lame old Berliner who had been in Argentina for 27 years. He played Chopin, *Adeste Fideles*, a Scottish ballad, and the pop song, *A Bicycle Built for Two*, on his harmonica while we dined. His brother was a geophysicist at MIT.

I attended Sunday morning Mass at the old undersized church that would soon be replaced by a new large one. Then I drank a cheese and orange soda, and caught the bus to Hotel Cataratas in *Parque Nacional Iguazu*, 18 kilometers (12 miles) away. I toured the falls from about 11 AM to 3:30 PM, when a rainstorm ruined the visibility. Iguazu Falls was located in a sharp bend of Rio Iguazu, about 20 kilometers from its junction with Rio Parana. The falls extended around a long arc and most of the water leapt over two ledges, for a combined drop of about 200 feet. A high tower near the hotel gave a good panoramic view of the top terrace of the falls. A sign compared Iguazu Falls with Victoria Falls in Africa and Niagara Falls in North America. The water volumes were 1750, 1000, and 7000 cubic meters per second, and the heights were 72, 102, and 51 meters, respectively. There was a low path below the falls and a high path above the falls on the Argentine side, and I took them both. Long parts of both paths were footbridges over roaring branches of the river above and below the falls. The low path was along the gorge wall to the left of the falls, and gave the best panoramic views on the Argentine side, plus a couple of opportunities to get right in under the leftmost cataracts, where there are rainbows and perpetual rains. The high path went behind the falls, and had feeder paths that led right up to the brink of about a dozen major cataracts, the most awesome of which was the Devil's Throat. It was at the head of the U-shaped precipice, where more water converged than perhaps at all the other sites combined. It was a thick solid sheet of water about a kilometer wide when I saw it, which was at the height of the rainy season. Canoes took people above the Devil's Throat for two pesos. An island on the brink of the gorge separates the long Argentine and short Brazilian sectors of the falls, like Goat Island separates the long Canadian and short American parts of Niagara Falls. The Argentine side is called Cataratas del Iguazu and the Brazilian side is called Foz do Iguacu.

I toured the falls on the Brazilian side the next day. Our tour group crossed the Iguazu River on a ferry below the falls and took us to Ortega Hotel. The Brazilian view of the falls was almost entirely panoramic, although there was a trestle path and a tower that gave a closer view of the Devil's Throat. We rented raincoats to walk the trestle because of the spray. The view was magnificent, but could be seen in a short time. A helicopter from the hotel gave tourists an aerial view of the falls. Two other attractions were a museum, which had a collection of live rattlesnakes, one twelve years old, and a gambling casino a short way into Paraguay. The border town on the Parana River was Pto. Pte. Stroessner, named after the longtime dictator of Paraguay. A new church was near the casino, so sinners could repent after they lost all.

My next goal was to see Machu Picchu. Back at the Ortega Hotel, I caught the 5:45 PM bus to Asuncion, and arrived there near midnight. Not wanting to pay for only part of the night in a hot hotel room, I slept on a park bench in the city center. A cop came by around 4 AM and hassled me. Almost every bench in the park had a bum sleeping on it. Maybe the cop thought I was a Mosad agent on my way to get Mengele. Shops were opening by 7 AM. I bought a bus ticket to Salta in northwestern Argentina, got a $2 room at the Americana Hotel, and watched some boys play soccer. That afternoon, I met Christ in the marketplace, in the person of an old beggar woman. Sad to say, I passed her by, just like the Jewish priest in Christ's parable about the Good Samaritan. A statue of a man on horseback in the park had no inscription. I wondered if it was the dictator Chavez, who declared war on Brazil, Argentina, and Bolivia all at once, and reduced the population of Paraguay by two-thirds as a result. He was regarded as a national hero, a Paraguayan Napoleon.

My bus left for Salta at 7:30 AM and crossed the Paraguay River into Argentina on a ferry boat.

The road was paved as far as Formosa, but then became dirt westward to Salta. We passed through bush country with gray-white sandy soil, similar to Texas mesquite country, with small, dusty towns of adobe or soft red brick houses about every 50 kilometers. We stopped for lunch in one town at a hotel-restaurant that seemed to be Peronista Party headquarters. A truckload of young Peronistas drove up chanting slogans while we ate, while a lad sang mournful ballads to his guitar. A horse collapsed in the street from the heat at another stop. Many wagons were drawn by a troika of horses. One was full of young girls in colorful dresses and holding umbrellas. I noticed more Indian blood in these people, but there was still the occasional blond. We passed through hilly country overnight and in the morning, as we crested a wooded hill, the white city of Salta was spread out below us against a backdrop of high forested mountains. The bus to the border town of La Quiaca left at 9:30 PM, so I spent most of the day in the city park, keeping company with San Martin in bronze. Some mentally retarded spastic men with hand-pedaled tricycles were selling lottery tickets at the bus station, which I thought was an improvement over warehousing them, as we do in America. The asphalt road ended at the town, 27 de Julio, and my bus climbed dusty, narrow, winding roads all night, stopping briefly at sleeping adobe villages with narrow, dimly lit streets.

As dawn broke, we were on a gently rolling wasteland dotted by dozens of donkeys nibbling at thin, sparse grass. High treeless hills rose from the barren plain. Green grass grew only on the beds of washes and inside walled-in plots of ground associated with small, impoverished, widely scattered estancias consisting of just a few acres of walls and two or three mud huts. I saw no sign of electricity or running water. As we passed one of the roadside cemetery shrines that are common in Latin America, even in that bleak landscape, I saw La Quiaca in the distance. It had paved streets and was surprisingly prosperous and tidy, as was the Bolivian town of Villazon across the small river that separated the two countries. Both towns had impressive Catholic churches. Marxists would say that these impressive churches in the midst of such poverty proves that priests suck the lifeblood from the peasants and give nothing in return. In my long journeys through Latin America, I found the opposite to be the case. Local priests are much revered, and poor people regard these grand churches as their own, like their mansion, and the one thing that sustains their communal esteem. They can say to travelers like me, “Look what we built in this wilderness!”

The elevation of the train depot in Villazon was 3347.40 meters, over 10,000 feet. I was indeed on the altiplano of the Bolivian Andes. After the dusty bus ride, I decided to splurge and bought a first-class train ticket to La Paz. The train arrived from the north at 1 PM and left at 3 PM. A steam locomotive built in 1958 by Hitachi of Japan pushed the cars around, but a diesel locomotive pulled the train when it left. A Canadian, some Swiss alpinists, and a few Germans, French, and Belgians boarded with me. We crossed the gently rolling altiplano until late afternoon, when we began a spectacular descent into a large, cultivated river valley. At the supper stop, most people got off and devoured platefuls of corn, potatoes, chicken, sheep, and rice prepared by the locals at stands beside the train station. I watched the Swiss gobbling some nameless serving. When the train left, I went to the dining car and ordered chateaubriand. I got a great lump of meat, rice, French fries, and a salad of lettuce, tomatoes, and onions, all for 20 pesos (one dollar).

The next day was Sunday, 3 March 1973, and most of the foreigners got off at Oruro to see a famous festival that lasted until Monday. Our train crossed a huge shallow salt lake south of Oruro. A German, about 35 and balding, was strolling about and smoking in the feigned sophistication of continental Europeans. Although he didn’t like to speak English, he managed to inform me that Mexico was the best and most interesting of all Latin American countries, saying, “I go everywhere there, north, south, east, west. I see all.” He escaped from East Germany before the wall went up and said, “I never go back.”

We came upon La Paz abruptly. It was in a large valley 200 meters below the altiplano, with steep wooded sides cut by deep arroyos. To the east, deep erosion had isolated numerous painted spires

that were lit by the low western sun and reminded me of the South Dakota Badlands. The train descended slowly along switchbacks, providing a good half hour of ever changing panoramas of the city and valley below. La Paz was a beautiful gleaming white city in the fading light. The people were celebrating the same festival as in Oruro, and children standing above railroad cuts dropped water-filled balloons on us as we passed through. The Canadian, Jeff Mills, and I attended the 7 PM Mass at an old cathedral that had a huge gold-plated main altar, two vast gold painted side altars, four slightly smaller side altars, great cupola stands for statues of saints on the central pillars, all of gold plate, gold leaf, or gold paint. I said to Jeff, "The Spaniards didn't ship all of the Andean gold to Spain." The altars were full of statues of Mary, other saints, and the gruesome statues depicting Christ's Passion that are typical of Spanish churches. The walls and ceilings had remarkable frescoes, and giant framed paintings of the Stations of the Cross lined the walls. The Stations were notable for showing a very robust, not to say fat, Christ. The priests were brown-robed monks, and were all native Bolivian Indians. No collection was taken at Mass. After Mass, we went to Hotel Austria and shared a room for 30 pesos without sink or bath.

We moved to Hotel Tumulsa the next day. It should have been named Hotel Tumulto. It was attached to a dance hall where the carnival band blared all afternoon and evening. Dancing was more like jostling, with Indian women in their shawls with folded arms and wearing their mind-blowing derby hats, facing men, and swaying on their feet. Men danced with more animation, using their arms and hands. The band was brassy, with bugles, trombones, and drums drowning out everything else. The singing was more like chanting. Colorful paper streamers and decorations hung from the ceiling. Tables with chairs lined the walls. It was a madhouse. Out in the swarming streets, cars and busses honked their way through milling crowds. Small stands took over the curbs and sidewalks, selling blankets and shawls, pots and pans, nuts and condiments, fruits and vegetables, fish and meat, each kind of ware more or less concentrated along specific streets and alleys. I saw one display that looked for all the world like skinned and gutted rats. Children ran about soaking people with everything from water guns to water balloons. Many stalls sold only carnival items, such as squirt guns, confetti, and masks. Others cooked hot food. As the evening wore on, the dance hall scene grew more lively. Men were swinging their ladies and the band blared out wild Indian rhythms. The footwork seemed to recall ancient tribal dances. One man, his bright striped poncho pushed over his shoulders, was wearing a brilliant tasseled vest and chaps, both woven in spiraling designs with multi-colored threads. His feet beat out a short quick rhythm and his arms were extended as he danced before his mate, while the driving trumpets and throbbing drums breathed wild Andean music that seemed pure Inca to me. That number was followed by a typical Latin tango, accompanied by vocalists. Dancing continued until the crack of dawn.

I was on the 6:30 AM bus to Copacabana, on Lake Titicaca, the world's highest big lake. It passed through lush farmlands, green from the rains, but farms weren't noticeably more prosperous than those impoverished estancias on the altiplano. Perhaps this was normally dry country too. Eventually Lake Titicaca appeared ahead of us. For two or three hours, our bus wound high along the side of the lake until it came to the peninsula that divided Lake Titicaca into two parts. It then made its winding descent to Copacabana, which was nestled picturesquely between two steep rocky hills at the base of the peninsula, passing cultivated terraces that rose from a broad green plain to the rocky spine of the peninsula. Copacabana was dominated by a tiled cathedral with a ceramic bell tower, surrounded by a walled courtyard, that provided much of the town's charm. A ferry boat and a hydrofoil boat took vehicles and people across the lake. When a truck came through the city square taking on people wanting to go to the Peruvian frontier, I climbed aboard with a South African couple. We bumped our way out of town, up and down hills, until we came to a stream where the bridge had been washed out. We waded across and caught a ride on one of the small busses that forded the stream. It took us to Yunguyo, the Peruvian border town. The carnival was going on there, too. We cleared Immigration and found a bus to Puno. The road was very rough, narrow, and frequently overrun by flooding streams, but it had a mostly stone bed. Llamas, donkeys, sheep, goats, and cattle grazed on the grassy marshland that the rains created alongside

of Lake Titicaca. By sundown, we had moved into hilly country that continued to Puno. It was a large town with paved and lighted streets. I spent the night at the Ferrocarril (Railroad) Hotel for 90 soles ($l.50).

I bought apples and bananas in the native market for the train trip to Cusco, and then boarded the 1 PM train. Two French Canadians from LaSalle in Quebec joined the South Africans and me. One showed me his Canadian passport that read, “The bearer of this passport is a British subject.” He thought Quebec would become independent in 20 years, and the South Africans (who were ethnic Germans) thought Black Africans would be in charge of South Africa by then. They said colored usherettes in white movie theaters weren’t even allowed to look at the screen. The train stopped at small towns all night. Finally the narrow valley we were following broadened enough to hold a city, and there was Cusco. It was 2:30 AM. I took a taxi to the Machu Picchu Hotel near the train depot, and left instructions at the desk to wake me at 6 AM so I could catch the 7 AM train to Machu Picchu.

A narrow-gauge track went from Cusco to Machu Picchu. There was a slow Indian train and a fast tourist train. I took the tourist train when I learned the Indian train would arrive two hours late. The trip was mostly through the deep, narrow Urubamba River gorge. We passed the returning Indian train from the day before and arrived at the Machu Picchu Hotel on the floor of the valley, where minibuses took us up a series of switchbacks to the Andean summit where Machu Picchu was built. I crawled all over the place, while most tourists gawked for an hour or two and returned to the hotel, where they lounged until the buses left at 2:30 PM. I climbed the highest summit, which was crowned with stone ruins and lay beyond the main structures, and returned in under an hour. The view from the top was tremendous. The main buildings fully met expectations. They were built of huge stones perfectly fitted together. Not having read any detailed explanation of the various structures, my sense of the place was that all major walkways led to an elevated complex that seemed to be a temple area. When the architectural marvel of Machu Picchu is combined with the lofty grandeur and remote majesty of its natural setting, the total impact is certainly one of the great wonders on Planet Earth.

Back at the train station, I traded dollars for some old silver coins sold by a vendor. The return train was uphill but faster. At one point, an old wall ran up the valley side, and I wondered if it was to keep invaders out of the valley leading to Machu Picchu. Machu Picchu was on the summit of a peak in the inner bend of the Urubamba River, so it could only be approached from the narrow constriction in the bend. The surrounding slopes were nearly vertical, and stone terraces ran down them as far as possible.

It was Ash Wednesday, the beginning of Lent, so when I returned to Cusco I went to one of the two massive churches in the city square and prayed. I met the South Africans at the hotel. They said a train strike after I had left kept them from going to Machu Picchu. The next morning, I caught the bus to Lima but its transmission went out at the noon lunch stop, and the stop stretched into evening. We transferred to another bus bound for Lima. The battery fell out of that bus during the night. A car brought a replacement which wasn’t much better (both were old, beat-up, and corroded) so we continued on without usable batteries. We were on the altiplano all day, and we met a herd of llamas on the road. A boy next to me got sick during the second night. He had the chills and I wrapped him in my blanket. We descended hairpin turns down the Andes all that night, without a working battery, and reached the coastal plain by dawn. We entered a town (Ica?) whose lights we had seen off and on for hours, changed to a bus that had a working battery, and continued on across the desert of southern Peru to Lima, following the coast most of the way. The scenery was on a grand scale, with exposures of glacial till and outwash in cutbanks all along the road. Surf rolled onto the beaches in waves 15 to 20 feet high. Fishing boats were at rest in isolated anchorages, where the smell from fish canneries was overwhelming. The coast was populated only where river valleys, fed by melting glaciers high in the Andes, emptied into the ocean. People lived in the most miserable shacks I had seen anywhere. Huge jumbled piles of stone reared into weird formations along one stretch of the road.

My bus arrived in Lima at 6 AM on 11 March 1973, and I learned that my Braniff flight to Miami left at 11 PM. I spent my last soles to buy my God daughter, Mary Susan Hughes, a pair of Peruvian dolls for her doll collection, and a silver and gold Peruvian pin of Inca design for Beverly Barr's birthday. A year later, while watching the Saint Patrick's Day parade in Columbus, Ohio, Bev accepted my proposal of marriage. The plane didn't actually depart until just after midnight. Bev loved her pin and she still wears it on special occasions.

Murder on Fletcher's Ice Island

Gerry Holdsworth had been my patron during my early years in glaciology. In May of 1968 he included me in the summit party (him and me) for surveying the height of Mount Logan, the highest peak in the Saint Elias Range of Canada's Yukon Territory and the second highest peak in North America. His idea was that Mount Logan, with an official height of 19,850 feet, might actually be higher than the official height of 20,300 feet for Mount McKinley in Alaska, because the original survey was made during the 1867 Alaska-Canada boundary survey, with no surveying party on the summit so refraction corrections could be made. Gerry thought the original survey could be up to 500 feet in error, so Logan may be up to 50 feet higher than McKinley (it wasn't). Gerry also included me in his project to drill holes through Meserve Glacier, one of the small Antarctic valley glaciers in Wright Valley, which gave me my first field experience as a glaciologist from November 1968 through January 1969. Then, in April of 1973, Gerry included me in his project to measure surface strain rates on Fletcher's Ice Island in the Arctic Ocean.

Fletcher's Ice Island was named after Joe Fletcher, a U. S. Air Force pilot who made an emergency landing on it during one of the polar flights at the time of World War II. Fletcher later became head of the Division of Polar Programs (now the Office of Polar Programs) at the National Science Foundation. The Chief Scientist at DPP was a famous geophysicist, Albert (Bert) Crary, who was involved in Antarctic glaciology during the International Geophysical Year. He had conducted studies of the ice islands in the Arctic Ocean in the 1950s, and published his results in the *Polar Record* in 1960. Several ice islands were floating in the Arctic Ocean, being trapped in the perennial sea ice, and were being used as surveillance stations by the US and the USSR during the Cold War, as the ice islands were about 60 feet thick, and therefore were much more stable than the sea ice, which was seldom more than ten feet thick, except when ice floes collided to create pressure ridges that were often over 100 feet thick. Crary showed that the ice islands were fragments of a unique kind of ice shelf that formed in certain fjords on the northern coasts of Ellesmere Island primarily, and of Greenland secondarily. During storms, high waves entered these fjords and broke over the rocky fjord headwalls. Some of the spray froze onto the rocks and, with repeated storms, this ice extended from the rocky walls out into the fjords and merged to produce a floating ice shelf that was attached to the rocky headwall and sidewalls. These ice shelves were not fed by glaciers. They were formed entirely from the freezing spray of breaking waves in the fjords. Sections of the ice shelves up to one or two square miles in size would break free from the unsupported fronts of the ice shelves at irregular intervals and be transported by estuarine ocean circulation out of the fjords to become trapped in the Arctic pack ice. The pack ice circulated in a great gyre in the Canadian sector of the Arctic Ocean, with small portions peeling off into the East Greenland Current each year, to eventually melt in the North Atlantic Ocean. Thus enclosed, the ice islands were flat, stable platforms that could be used for many years as military and scientific outposts where aircraft could land and take off safely.

Fletcher's Ice Island was called Ice Island T-3 by the Office of Naval Research (ONR) in the United States Department of Defense. The ONR constructed the Naval Arctic Research Laboratory in Point Barrow, Alaska. It operated the station on T-3 under contract with the University of Alaska. Gerry Holdsworth had the idea that T-3 would be ideal for testing the theory of how thick floating ice thins and spreads under its own weight, a theory that my glaciological mentor at Northwestern University, Hans

Weertman, had developed and published in 1957. Gerry wanted to construct a surface strain network on T-3 to measure the longitudinal velocity gradients caused by spreading due to gravitational thinning, and use the creep law of glacial ice to calculate the stresses that caused the measured velocity gradients. The strain experiment also required drilling through T-3 to measure the variation of temperature through the ice thickness, and to extract ice cores to study any changes in the physical properties of ice through the ice island. The holes would be drilled by hand using a SIPRE ice auger of the kind I had used in Antarctica on Meserve Glacier and the crater glacier on Deception Island. The strain experiment included an extensive surface-leveling study to map ice thickness variations as variations in the elevation of floating ice.

We flew from McGuire Air Force Base in New Jersey to Sondrestrom Air Base in west Greenland, and then on to Thule Air Base in northwest Greenland in Starlifter Air Force transport planes. From Thule, we took a flight in a smaller airplane to Alert, a small Canadian station on the northern coast of Ellesmere Island that was part of the Distant Early Warning (DEW Line) system of surveillance stations in the Canadian Arctic. From Alert, we took a twin-engine aircraft to Fletcher's Ice Island, T-3, landing on 13 April 1973. At that time, T-3 was located at 83 degrees, 42 minutes north latitude and 85 degrees, 18 minutes west longitude.

Upon our arrival, we learned the details of a horrendous murder that had been in the news, but was given "no legs" as a news story, so the full account and outcome was not generally known. The cook, an Eskimo, had murdered the base commander, an American. It was a grisly killing (the murder weapon was a meat cleaver), and arose because of long-simmering animosities that can develop when a small group of men is confined for extended periods in remote places with little outside contact. There was no question of who the killer was, but it turned out to be the perfect murder anyway, not because facts were in dispute, but because the jurisdictional question could not be settled. The murder took place in the sector of the Arctic Ocean claimed by Canada, but it was on a floating platform controlled by the US Navy and operated by an American university. Was it murder on the High Seas? Should the murderer be prosecuted in a Canadian court, a United States military court, or an Alaskan civil court? Deciding the jurisdictional question raised questions of International Law that no court was eager to probe. Since the murderer was an Eskimo and his victim was a white man, a trial also raised questions of how to deal with native people and how to ensure a fair trial, at a time when public awareness was growing regarding the traditional discrimination against native people in both the United States and Canada, especially Canadian awareness of American abuses. For all of these reasons, and perhaps others as well, the decision was made not to prosecute the murder. I call this the perfect murder because, unlike unsolved murders, the killer has the additional satisfaction of not just getting away with it, but having everyone know he did it, and getting the general approval from his own community for knocking off one of that worst-of-all oppressors, The White Man.

We were a three-man field party on T-3. Gerry busied himself with drilling the core hole through the ice island, while I was the rod man for the man (whose name I cannot remember) who operated the optical level mounted on a tripod. We leveled the whole island, so we could produce an accurate map of the ice thickness. When those jobs were completed, the three of us constructed a surface strain network in which we used a laser gun and reflector to obtain high-accuracy distances between points on the strain network. We used a relatively new technique called laser interferometry, in which changes in the distance were recorded in changes in the number of wavelengths of the laser light beam. This permitted highly accurate changes in distance to be measured over short periods of time. As with any new technique, unanticipated problems arose that had to be overcome in the field. In our case, the major problem was fluttering of the laser beam caused by small variations of atmospheric temperature. These flutters kept the laser beam from focusing on the reflector long enough to get an accurate count of the wavelengths, which were then converted into distances. We solved the problem by using numerous 4 by 8 foot sheets of

plywood stockpiled on T-3 to make a tunnel shaped like an inverted V between the laser gun and the reflector. We leaned pairs of plywood sheets against each other and piled snow over them, so the tunnel would be kept at a constant temperature and sheltered from winds. Gusting winds were responsible for the temperature fluctuations outside, as well as vibrations of the laser gun and the reflector, and hence for fluttering of the laser beam.

As we were conducting the strain experiment, an enormous ice floe collided with T-3 and produced a pressure ridge perhaps 80 feet high along one side of the ice island. This was recorded as a compressional strain rate by our laser instruments, and it threw into doubt the major assumption of Gerry's strain experiment. That assumption was that T-3 was spreading under its own weight as if it were surrounded only by sea water, not sea ice. Gerry had assumed sea ice was too thin to exert any significant compressional stress on T-3. If the sea ice piled up to produce a pressure ridge that was much thicker than the ice island, that assumption was invalid. The compressional strains we measured proved that it was invalid. Gerry immediately changed the goal of his experiment from a study of the Weertman creep-spreading theory, to a study of the effect of sea-ice pressure ridges on T-3, a study of much more practical interest to the Naval Arctic Research Laboratory, as it addressed the stability of ice islands in general as military outposts in the Arctic Ocean.

Due to another commitment, I had to leave T-3 before Gerry's strain experiment was completed. However, only the interferometric measurements remained and those could be conducted by Gerry and his surveyor without me. A four-engine plane had landed that was returning to Alaska, so Gerry said I could take the return flight. A D-8 caterpillar kept the runway smooth, at the price of an ever-higher pile of scrapings at the end of the runway. One engine would not start for the return flight, so the pilot decided he would try to take off with just three working engines. When all of his passengers had climbed aboard and strapped in, he taxied to the end of the runway, revved up his three engines, and released the brakes. The plane lurched forward and roared toward the pile of rubble at the other end of the runway. Then the brakes came on and the plane skidded to a halt. The pilot told us he didn't have enough speed to clear the rubble, so he would feather the propeller of the dead engine and try again. We taxied to the end of the runway, he feathered the propeller, revved up the other engines, and released the brakes. Again we roared forward, only to come to a skidding halt without taking off. The pilot told us he had to feather the propellers some more. We tried to take off a third time with the same result. The pilot said, "The next time I'm not stopping." He taxied to the end of the runway one more time, we roared forward, the pile of rubble got closer and closer, and in the last seconds barely passed under our wings. After we had been in the air for two hours or so, I went up to the cockpit and asked the pilot if we had passed the point of no return. He replied, "We passed that point when I released the brakes for the last time on the T-3 runway." I suppose the Bull-Nye Syndrome was operating the controls in the cockpit, not the pilot. In any event, we landed in Fairbanks with three engines and without mishaps.

The Second International Conference on Permafrost

On my first trip to Russia, I got off the Trans-Siberian Railway for a day of sightseeing in Irkutsk, a town near Lake Baikal. I had seen pictures from Yakutsk, a town in northeast Siberia on the Lena River. It was in the heart of the Russian permafrost country, and tall log buildings in the pictures were leaning at all crazy angles because heating inside the buildings had thawed the permafrost under them. The crazy angles reminded me of *The Cabinet of Doctor Caligari*, a German silent movie from 1919 in which the world is seen through the eyes of a madman. All of the streets, buildings, hallways, windows, doors, everything, are tilted at crazy angles. Right away I knew I had to go to Yakutsk, someday, somehow.

In 1972 a pamphlet arrived by mail announcing that the Second International Conference on Permafrost would be held in Yakutsk on 16-20 July 1973. The pamphlet called for papers to be presented at the conference. I immediately began thinking about what I could present. The obvious choice was a

paper on the creep of the glacier into the ice crater on Deception Island. The glacier had been covered with a thick layer of water-saturated ash at the time of the 12 August 1970 volcanic eruption that produced the crater. Since August was the coldest month, the water froze immediately, producing a blanket of ice-cemented ash—permafrost, by definition. I scanned the permafrost literature and found that there was virtually nothing published on the creep of permafrost. I had submitted a proposal to the National Science Foundation that included measuring creep in the permafrost layer and the proposal had been funded. I submitted an abstract that promised to report results from field work during the 1972-1973 Antarctic summer. However, that work was still ahead of me, so to cover my bets I submitted another abstract advancing the hypothesis that much of the permafrost in Siberia and Arctic Canada was really the basal regelation ice layer of Pleistocene ice sheets. That layer consists of ice produced from refrozen (regelled) basal meltwater, so it also consists of all the loose material lying on bedrock or eroded from bedrock that would be plastered onto the base of these ice sheets along with the refrozen meltwater. As the ice sheets wasted away, the loose material would be left on the surface as regelation ice melted and would eventually become thick enough to retard further melting. Everything under that debris layer would then be permafrost. It would be altered by all the present-day processes related to summer melting and winter freezing that modify a permafrost landscape, but the original ice in this mix would be the basal ice of the Pleistocene ice sheets. Since this was one of my "idea" papers, I didn't need much data and I could start writing the paper right away. I wrote it, submitted it, and it was accepted. It was my ticket to Yakutsk and all those crazy buildings.

I arranged my trip to Yakutsk through Vega International Travel Services in Chicago, the company that handled my earlier trips to Russia. The flight to Yakutsk gave my first look at the Siberian taiga, the trackless coniferous forest that extends all the way to the Arctic Circle and which is inhabited by Siberian tigers in the districts east of Yakutsk. Yakutsk was then the capital of the Yakut Autonomous Soviet Socialist Republic, one of the administrative regions of the Russian Soviet Federated Socialist Republic, the largest "republic" of the old USSR. It had a number of mortar-and-plaster government buildings in the dreary coffin-like Soviet style, buildings that are falling down even as they are going up. But it also had many log buildings, some two and three stories high, and some were indeed tilting at crazy angles, just like in *The Cabinet of Doctor Caligari*. I thought that the most tilted ones might have dated from Czarist times.

The Yakuts are a Mongolian people who speak a Turkik language. Their high cheekbones stick out more than their flat noses, giving their broad faces a concave appearance. In addition to the ominous-sounding House of Political Education and Yakut State University, Yakutsk had two hotels, two restaurants, three museums, two movie theaters, a drama theater, a library, a "polyclinic," a department store, and the usual shops. The Lena River Steamship Agency handled all river traffic. Conference activities were conducted in the four-story House of Political Education. At the center of the circular driveway outside was a large round pond, in the center of which a gigantic wooly mammoth spouted water. Separate rooms accommodated delegations from the USSR, the Soviet bloc countries, the USA and Canada, and the rest of the world. A program of social events was provided. The conference was organized in seven sessions, each dealing with a particular aspect of permafrost around the world, but mostly in the USSR, USA, and Canada. A set of ten hardbound volumes, in Russian, presented Soviet permafrost research and was given to each participant. All papers delivered in English were subsequently published in a hardbound volume. Five post-conference field trips were organized, each with its own softbound guidebook in English.

The most extensive field trip, which most of us took, covered over 2000 km of central and northeast Yakutia and was five days long. On July 23rd, we flew to Tyeplyy Klyuch. From there we took a bus on the highway from Khandyga to Magadan, following the Aldan River lowland, and returned to spend the night at Tyeplyy Klyuch. Then we flew to the Indigirskiy Settlement on the Indigirka River,

landing at Ust'Nera airport, and continued by bus to the Marshalskiy Settlement. We were to take a ferry across the Elgi River, a tributary of the Indigirka River, to see gold mining activities. However, melting permafrost had turned the river into a raging torrent and the ferry wasn't running. While the others were having lunch, I decided to swim across the Elgi River. I stripped down to my underwear briefs and swam across below a series of huge standing waves at the ferry crossing. It was a swim of about fifty yards in ice-cold water that sapped my energy. The river doubled in width a short distance downstream, so I decided to swim back across at the narrower part above the standing waves. While walking there, my body was immediately covered with mosquitoes and I couldn't move very fast barefoot on the sharp stones along the riverbank. By then the people eating lunch saw me making my way and they began to line the opposite bank. The mosquitoes were driving me crazy so I got back in the river just above the standing waves. I swam as hard as I could, but the current carried me right into the waves. They were so high, about six feet, that I lost my bearings, so I decided to just ride through them rather than take the chance of unknowingly swimming to the wrong bank. When I made it through the waves, I had to swim like mad to make the point of land just before the river doubled in width. I barely made it and threw up as soon as I climbed up the bank. I found my clothes, got dressed, weaved back to the bus, and got on as if nothing had happened. Nobody said a word, even though my body was trembling. The bus took us back to the Indigirskiy Settlement for the night.

The next morning, July 26th, a helicopter took us in two flights over the glaciers on the Ulakhan-Chistaiskiy Ridge to the Moma depression. It is a poorly drained part of the Moma River Valley and is the Land of Giant Icings, 82 large ones with a total area of 428 square kilometers. In really cold years, the giant icings merge to form one icing that covers the whole depression. Icings form when the Moma River freezes to the bottom in the depression during wintertime, so when tributary streams start running during the spring thaw, the meltwater flows down the Moma Valley and over the top of the ice still frozen to the river bottom in the depression. A temperature inversion characteristic of this part of Siberia makes the lowlands colder than the highlands, so spring meltwater flooding down from the highlands spreads out over ice in the depressions and refreezes there. Most of the giant icings melt away over the summer months. The giant icings in the Moma depression were a most impressive sight, even in late July. If the icings survived summers, it seemed to me an ice cap would form in the Moma depression. Could it become an ice sheet? Did it, and was the thick Siberian permafrost its basal ice layer? We returned to Indigirskiy and took a bus into the Indigirka River Valley.

The next morning the plane took us to the Tomtor Settlement, landing at Oymyakon airport. We took a bus into the Oymyakon depression to the Oymyakon Settlement. Oymyakon has the distinction of the lowest recorded temperature on Earth outside of Antarctica, -71 degrees Celsius. The Yakut people there had prepared a dinner for us in the dining hall of the school. Before dinner, they led us on a tour of the facilities. The school had a big swimming pool and, as we were walking around it, Bill MacDonald appeared stark naked and began chasing one of the female guides around the pool, whooping all the way. Bill was a big, raw-boned Scotsman with a head of thick black bushy hair that looked like a turban. He would be magnificent in kilts and tartan. The guide disappeared through a door with Bill in hot pursuit.

Our next surprise was the dinner, which was a traditional meal prepared and served by Yakuts. The drink was fermented mare's milk and the main course was Yakut sausage. We were told that it was horse intestines filled with the original packing, all highly seasoned, of course. We were seated on both sides of a long table. A section of sausage about twenty centimeters long was put on the plate of each guest. I was near the end of the table, with a Polish female scientist sitting across from me and a young female Russian interpreter sitting next to me. When the Yakut server put the section of sausage on the Polish woman's plate, she said something to her in Russian that made her clap her hand over her mouth and run for the door. I asked the Russian interpreter, "What did she say to that Polish woman?" The interpreter looked at me blushing and said, "She told her, 'Aren't you the lucky one. You get the most

tender portion, the last twenty centimeters just before it falls on the ground.'"

The next morning we flew to Mus-Khaya and then back to Yakutsk. On these flights, we passed over the southern Verkhoyansk Mountains, the Cherskiy Range, and the vast Momskaya intermountain region, flying at low altitudes for optimum sightseeing. We saw glaciers in the Verkhoyansk Mountains, the Yana, Indigirka, and Kolyma Rivers that empty into the Arctic Ocean and can freeze to the bottom at places during winter, the giant icings in the Moma depression, landscapes of extreme continental climate and continuous permafrost sometimes over 500 meters thick, a great variety of cryogenic and glacial landforms, challenging construction and mining conditions, and the way of life for people under some of the most severe natural conditions and extreme human isolation on Earth.

Down the Volga and Up the Danube

I had Vega Travel arrange my trip to the permafrost conference because it specialized in travel to Soviet bloc countries, and I wanted to travel down the Volga River and up the Danube River on my return trip. When the plane from Yakutsk arrived in Moscow, I had a day of sightseeing inside the Kremlin before taking a train to Kazan, where the Volga River cruise began. Kazan was the capital of the Tartar Autonomous Soviet Socialist Republic within the Russian Soviet Federated Socialist Republic. It had become a seat of Mongol power after the Golden Horde of Genghis Khan swept over eastern Europe in the thirteenth century. Of all the Russias, only the Republic of Novgorod survived the onslaught. The Principality of Muscovy remained a vassal state until Czar Ivan III. His grandson, Ivan IV (Ivan the Terrible), conquered Kazan in 1552 and became the first Czar of Russia. Ivan the Terrible began the conquest of Siberia. Some passengers on the train to Kazan had the high cheekbones and almond eyes of the Tartars, features that were even more in evidence when I walked the streets of Kazan. The city itself had evidence of its Tartar heritage in the architecture of pre-Soviet buildings, especially the churches. The big Soviet propaganda posters and banners that appeared all over the Soviet Union in those days depicted people with a marked Tartar cast in Kazan. The river boat for the Volga cruise had two decks of cabins above a broad main deck, and reminded me of the flat-bottomed passenger boats on the Mississippi River from the Mark Twain era, but without the side or stern paddlewheels.

Three Americans from Boston were also taking the Volga Cruise, Aileen Cavanagh and her two nieces, Eva and Carole. Aileen was in her early forties. She was a two-hundred-pounder with short rufous hair and a no-nonsense manner, but also with a bright smile and a lively sense of humor. She was of medium height, but both of her nieces were tall, slim, and gorgeous. Eva was five feet ten, nineteen, and a strawberry blonde with blue eyes. Carole was five feet eight, seventeen, and a brunette with green eyes. They had high cheekbones and the cameo complexions of the Irish, and Eva's face was lightly freckled. Both of them were shy, but they had terrific figures and winning smiles. I thought, "This is definitely going to be a very pleasant cruise!" I hit it off with Aileen right away. She held an engineering degree and was a professional woman who was acting as a private consultant, after many years in the corporate ranks doing research. Although I was strongly attracted to her nieces, especially to Eva, I couldn't connect with them to establish anything like the easy rapport that was so natural with Aileen. They were teenagers and I was thirty-five years old.

Our boat made several stops on the Volga, both to let passengers on or off and to let passengers who were on for the whole cruise do some sightseeing. The first major stop was at Ulyanovsk, about one hundred miles south of Kazan, named after Ulyanov, the name of Lenin's family, before he took the name "Lenin," meaning "Man from the Lena," to create the myth of a man coming out of the Siberian wilderness to lead Russia into the Marxist utopia. Lenin was born in Simbirsk, which was renamed Ulyanovsk after the Bolshevik Revolution. We toured the Lenin museum in Ulyanovsk. At the center of the main hall inside was a book on a dais where visitors were encouraged to sign their names and write whatever thoughts they dared consign to paper. I wrote: "This is the third time I have visited the Soviet

Union. I see statues and portraits of Lenin everywhere. The only other figure in human history having that kind of visibility is Jesus Christ. Yet Jesus spread his message of peace and love without ever harming anyone. In stark contrast, Lenin spread his message of strife and hate by murdering millions. Therefore, I propose as an answer to The Lord's Prayer taught by Jesus Christ, The Lenin Prayer:

The Lenin Prayer

Our Lenin, who art in Moscow, feared be thy name.
Thy Marxist Utopia come, thy will be done,
In the West as it is in Russia.
Give us this day, our daily slogan,
And forgive us our revisionism as we forgive those
Who conspire against us.
Lead us not into the Gulag,
But deliver us from Capitalism.
For thine is the dictatorship, the secret police, and the terror,
Now but not forever.
Amen.

The museum guards were watching me intently because I was writing in the book for such a long time. As soon as I left to see the exhibits, they all crowded around the book. When I was ready to leave the museum, I went back to the book and discovered that my page had been ripped out.

There were a number of minor stops along the river, but the other major stop that made a lasting impression on me was at Volgograd, formerly Stalingrad until "the Man of Steel" was debunked under Khrushchev. The tide turned against Hitler at the Battle of Stalingrad in World War II, and an enormous memorial in the city commemorated the event. The memorial was on a high hill above the Volga, so it could be seen from miles away. At the foot of the hill was a huge carving of the head and naked torso of a muscular Russian soldier bearing a machine gun. Halfway up the hill was a big circular domed building. Inside, a stairway ramp curved around the wall, upon which all the names of the dead Russian soldiers were stamped in gold letters. A large fountain filled the center under the dome. Soft ethereal music was piped in from unseen loudspeakers. It was impossible for me to be in that place and believe that so many men gave their lives to preserve Josef Stalin and atheistic Communism. It had to be Holy Russia that called forth sacrifice on such a scale. At the top of the hill was a gigantic statue of a woman striding forward in flowing robes and holding aloft a huge sword. It was called Motherland, and it was bigger than the Statue of Liberty. Its face had a wild expression, with fierce eyes and an open mouth with lips curled in defiance. I have a book, *Art Under a Dictatorship*, that has page after page of such figures from Imperial Rome, Nazi Germany, and Communist Russia. They all show grotesquely muscled men and female Amazons, always angry, always leading "the masses" toward some superhuman goal. Power is more important than brains. There is no place for gentleness, only for force; no place for mirth, only for anger. Motherland could have been the frontispiece.

It was with some dismay that I noticed Eva and Carole taking an interest in an East German youth. Most of the time all he wore were tiny bikinis, which is to say that most of the time he was practically naked. In front, his genitals were clearly outlined through the thin fabric and scanty pubic hair showcased his pubic arch. In back, the bikini left the top of his crack and the bottom of his cheeks exposed and clung to the contours of his little butt in between. He was very slightly built. His body was as flat and narrow as a board, and had a girlish softness, smooth with no visible muscles. His small delicate ribs, iliac crests, shoulder blades, and vertebrae pressed against thin untanned skin. His shoulders and hips

were narrow, and his neck, waist, arms, and legs were very thin. His brown hair had a pageboy cut that framed a thin, narrow face with sharp features. When he walked, he swayed his bony hips as if he were Marilyn Monroe. I called him "Lothar" because he fit the description of a German youth with that name in a novel by Richard Hughes, *The Fox in the Attic*, published in 1962. Eva and Carole were taller and heavier than Lothar, but somehow they were still attracted to him. Lothar did not return their interest, except for an occasional coy smile. He was usually with his traveling companion, a husky East German with dark unruly hair and a close-cropped beard. He was some years older than Lothar, probably in his early twenties. I judged Lothar to be seventeen or eighteen.

The boat stopped at various sites along the Volga so the passengers could swim, sunbathe, hike, and play. Eva, Carole, Aileen, and I watched the young people play volleyball without a net on a broad sandy beach at one such stop. They were all young men and boys except for a shapely brunette with an hourglass figure that reminded me of Ava Gardner. She wore a two-piece bathing suit. All the men and boys wore bathing trunks except Lothar, who wore a tiny red bikini. He was naturally quick, and he would often dive to try and return the volleyball when it was beyond his reach. He would then roll around in the sand. On one occasion, he was slightly aroused when he got up and one ball dropped through the outstretched leg hole. He rolled it between his thumb and fingers while waiting for the volleyball to come his way again. Eva's and Carole's eyes were popping, until Aileen led them away. The game broke up when the boat's horn sounded. Lothar and his bearded companion entered their cabin on the boat.

On another occasion, Lothar took a swim and sunbathed on the beach. He picked a spot alongside a plump Russian woman wearing a two-piece bathing suit, laid out his little towel, stretched out on it, and lit up a *Marlboro* cigarette. He was wearing his itsy bitsy teenie weenie tiny red bikini. He and the Russian woman made an unlikely pair, with his skinny body and sunken abdominal cavity juxtaposed to her ample figure and bloated belly. Eva and Carole decided to sunbathe a discreet distance away so they could ogle Lothar without his seeing them, should he become aroused again. Aileen and I took a guided tour of a hydroelectric power plant, one of several on the Volga.

Toward the end of the cruise, the boat captain announced a Neptune's Festival. He wore a Father Neptune costume, and several of the crew appeared as mermaids and mermen. There was to be a barbecue on the beach, preceded by entertainment conducted by passengers. Lothar was wearing a tiny brown bikini and a red silk neckerchief on this occasion. All of us were invited to "perform" in some way. Eva and Carole demurred. Lothar did a kind of belly dance. His little tummy twisted and turned below his ribcage, while he thrust forward the sharp iliac hatchet blades of his hipbones and gyrated to Arabian music that a boatman played on a concertina. Eva and Carole were ecstatic. When my turn came, I sang *Old Man River* with no accompanying music. I got polite applause and was probably off key.

After our boat left Volgograd, it entered a system of locks on a canal that connected the Volga River to the Don River. Eva and Carole were lounging on deck chairs at the bow when Lothar and his bearded companion walked past them and leaned against the bow railing to watch the gates open one of the locks. Lothar was wearing his little red bikini and his companion was wearing boxer swimming trunks. It was another interesting contrast. Lothar's shoulder blades, ribs, and vertebrae stuck out from his narrow shoulders and back, while his companion's broad shoulders and back displayed only muscles. Lothar's legs were thin, smooth, and hairless, while his companion displayed hairy thighs and calves bulging with muscles. I asked Eva and Carole which body they admired the most. They just giggled and blushed. What would their reaction have been if there was a wet semen stain in the butt-crack of Lothar's bikini? I didn't ask.

From Rostov-on-the-Don, I boarded a Soviet flight to Odessa, where boats crossed the Black Sea to the mouth of the Danube River, and then steamed up the Danube to Passau in Germany. I held a ticket for that trip. There were stops at Izmail in the Danube delta, Galati in Romania, the sister cities of Giurgiu

(Romania) and Ruse (Bulgaria) on opposite banks of the Danube, Turnu-Severin in Romania, beyond which a new dam across the Danube was built at the entrance to the Iron Gate, Belgrade, Budapest, Bratislava, and Vienna, before reaching Passau. My reason for taking the Danube trip was to pass through the Iron Gate after the dam was completed. The Iron Gate is a narrow gorge two miles long through the Transylvanian Alps. It was a treacherous passage that predated Roman times. The Emperor Trajan made the passage safer by cutting a trail along the south wall of the gorge so oxen could pull boats and barges upriver against the swift current. I had taken a boat from Belgrade downriver through the Iron Gate in 1966, before the dam was built, and it was a wild ride indeed. This time my boat went upriver. The Iron Gate had become a placid lake and Trajan's ox trail was below the waves. The Trajan commemoration carved on the wall I had seen during my 1966-1967 trip around the world remained in view, and I took a photo of it.

I stopped in Vienna long enough to look up Franz Felberbauer, an Austrian whom I had befriended when we were both young Master-of-Science graduate students at Northwestern University from 1960 to 1962. Franz had lost his thin boyish figure, had married a dark-haired Magyar from Hungary, and they had two sons. We swapped stories of our days at Northwestern. I had taken an interest in Nazi racial theory when we were students there. Franz seemed to be pleased at the time, and he informed me that he "was pretty pure Aryan." All that was history when I visited Franz and his family in 1973. After a brief visit to their home in the hills outside of Vienna, and a little sightseeing in the city, I was back on the boat to Passau at the end of my Danube cruise. Franz contacted me by e-mail in 2009. By then he had three grown children and was a general in the Austrian army. He had represented Austria in several trips to Washington, D.C. We stay in touch.

From Passau, I took a train to Venice. In Venice, I had time to do some sightseeing. The fist treat was watching glass blowers make bottles and other glassware. One cutlery shop had a big meat cleaver. I traced the outline of a Bowie knife on it and asked the head craftsman if he could make the knife for me in two hours. He said he could, so I spent two hours touring Venice. Near Saint Mark's Square, I stopped in a little restaurant and ordered a Venetian pizza. It was quite different from American pizzas, which I suppose trace their lineage from Naples and Sicily. During gondola rides, I saw lots of evidence that Venice was slowly sinking into the marshy land at the head of the Adriatic Sea. The Bowie knife was absolutely magnificent, with a blade over a foot long, a quarter of an inch thick, polished like a mirror, and razor sharp. What a buy! (Jim Bowie's knife was three-eighths of an inch thick.) Venice is truly a treasure. Lots of plans are out there on how to "save" it but none is being implemented. The train to Paris and my flight to Ohio crossed Switzerland at night so I didn't see a thing.

The Fourth International Conference on Permafrost

The Fourth International Conference on Permafrost was held in Fairbanks, Alaska. Like the second conference in Yakutsk in 1973, I attended the fourth conference mainly to participate in the field trips. Bev went with me. The conference was from 17-22 July 1983. We flew to Anchorage and took the train to Fairbanks. The field trip was from Fairbanks to Prudhoe Bay by bus on the "Hinkle Highway" named after the governor of Alaska who authorized the road. It was paved as far as the Yukon River. From there to Prudhoe Bay it was gravel, but kept in good shape. The oil pipeline zigzagged along the way, to accommodate thermal expansion and contraction during the year. The pipe was about 4 feet in diameter, and supported on "shoes" that allowed both vertical and lateral motion. We saw some "icings" along the way just north of the Brooks Range, but nowhere near as big as the huge icings in the Moma Depression of Siberia. Mountains in the Brooks Range were impressive, not as much as peaks in the Alaska Range, but well worth seeing. The Alaskan North Slope was also interesting, with the intricate patterns of July lakes in hollows where the active layer of permafrost had thawed. Prudhoe Bay had the look of a "boom town" for oil exploration. The bay itself was still studded with cakes of sea ice, even in late July. I stripped to my underwear briefs and went swimming. I'd swum in the Antarctic Ocean in the hot-and-

cold waters of Deception Island, and I wanted to swim in the Arctic Ocean too. So I did. Bev took a picture as I came ashore. I've swum in all seven seas of the world, most of them many times on many shores in many lands.

The bus ride from Fairbanks to Prudhoe Bay completed a dream I had had ever since my first trip around the world in 1966 and 1967. That was to travel overland by bus and train from the southern tip of South America to the northern tip of North America, as far as roads and rails would take me. In the 1966-1967 trip, I traveled by bus from Chicago to Fairbanks and from Lima, Peru, to Chicago. In 1973 I traveled from Ushuaia, Argentina, to Lima on busses and trains. Now in 1983 I had traveled by bus from Fairbanks to Prudhoe Bay. Mission Accomplished.

Photos for Chapter 9: The Magic Carpet

Sheet 1: To Deception Island and back through South America

Photos are numbered from left to right and from top to bottom.

1. The *Hero* took us from Punta Arenas across Drake Passage to Deception Island.

2. I'm riding as my "bucking bronco" the boom on the *Hero* as it crosses Drake Passage.

3. Jacques Cousteau's ship, *Calypso*, visits Deception Island. This is the *Calypso* helicopter.

4. The 1970 volcanic eruption produced this crater with a calving ice wall on one side.

5. Ice slabs about to calve from the ice wall. The ice wall was originally 100 meters high.

6. The entrance to one of our four tunnels into the calving ice wall.

7. Fitz Roy in southern Argentine Patagonia. I spent three days climbing around it.

8. Iguazu Falls from the Argentine side.

9. Iguazu Falls (Fos du Iguacu) from the Brazilian side.

10. Machu Picchu (left center) in its natural setting.

11. Machu Picchu closer.

12. Machu Picchu holds me in its awesome splendor.

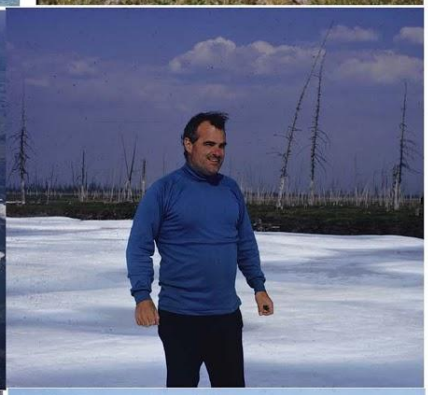
13. A fishing village on the Pacific coast of Peru. The land is a desert with no rainfall.

14. The magnificent Pacific beaches of Peru with no people. Almost nobody lives here.

15. The only agriculture on the Pacific coast is in valleys fed by melting Andean glaciers.





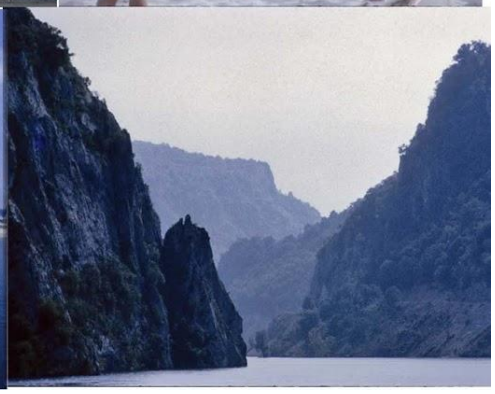



ОЙМЯКОН
ВЙМЯКВЙН


ИЗ ИСКРЫ
ВОЗГОРИТСЯ
ПЛАМЯ







Sheet 2: Northeast Siberia, down the Volga, and up the Danube.

Photos are numbered from left to right and from top to bottom.

1. The permafrost conference was held at Yakutsk in the House of Political Education.

2. Cranes on the Lena River at Yakutsk.

3. I'm ready to ride with Genghis Khan on a Siberian pony.

4. Glaciers crown summits of the Cherskiy Mountain Range in northeast Siberia.

5. One of the giant icings in the Moma Depression at a distance.

6. I'm standing on the largest giant icing.

7. Oymyakon has Earth's lowest recorded temperature outside of Antarctica, - 71 degrees Celsius.

8. A Siberian slave-labor prison in Stalin's *Gulag Archipelago* described by Solzhenitsyn.

9. Communist propaganda pointing the way to Stalin's Marxist Utopia beyond the prison.

10. The ship at Kazan that took us down the Volga River to Rostov.

11. The gigantic Soviet *Motherland* statue in Volgograd (formerly Stalingrad).

12. A game of volleyball during a stop on the Volga River cruise from Kazan to Rostov.

13. A mother and her sons take photos on our cruise up the Danube River to Passau in Germany.

14. The dam across the Danube near the Romanian-Yugoslavian border built in 1967-1969.

15. The Iron Gate (east entrance) in 1971 above the dam across the Danube. Trajan's plaque on left at the shoreline was above a roadway where oxen pulled barges up the Danube. The roadway is now under water.